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Overview of Sentinel Surveys in NAFO Divisions 2J3KL and Subdivision 3Ps: 1995-2008

Aperçu des relevés des pêches sentinelles dans les divisions 2J3KL et la sous-division 3Ps de l'OPANO : 1995-2008

D. Maddock Parsons and R. Stead

Science Branch
Department of Fisheries and Oceans
P.O. Box 5667
St. John's NL A1C 5X1

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ABSTRACT

Data from the Sentinel program in the Newfoundland and Labrador region (NAFO Div. 2J3KL and Subdiv. 3Ps) are summarized and updated with 2007 and 2008 data. Average annual catch rates for 5½ inch gillnet (number of fish per net) in 2008 are the highest in the time series for Div. 2J and 3K, and second highest in Div. 3L. In Subdiv. 3Ps, however, catch rates since 2000 have remained at a much lower level than 1996-97 values. Small mesh gillnet (3¼ inch) catch rates have been more variable and trends are more difficult to discern; probably due to the ability of this gear to catch fish from two distinct size ranges. Linetrawl catch rates (number of fish per 1000 hooks) in Div. 3K and 3L showed trends similar to 5½ inch gillnet until 2005, decreasing from the late 1990s to the early 2000s, and then generally increasing. A drop in Div. 3K catch rates in 2006 was followed by an increase to 2008, which is the second highest catch rate in the series. In 2006, catch rates in Div. 3L dropped from the 2004-05 levels, and remain at about the lowest catch rates for this gear in this Division in 2007-08. In Subdiv. 3Ps, linetrawl catch rates decreased from 1996 to 2000 and then were variable, but generally increased to 2008. There has been no Sentinel linetrawl activity in Div. 2J since 2001.

Spatially and temporally, catch rates were variable from year to year and place to place. Higher catch rates have been most consistent from Happy Adventure to Little Catalina in 5½ inch gillnet, from Wesleyville to Bay de Verde in small mesh gillnet and high catch rates were more spatially widespread in linetrawl.

RÉSUMÉ

Les données du Programme sentinelle dans la région de Terre-Neuve-et-Labrador (division 2J3KL et sous-division 3Ps) ont été récapitulées et mises à jour à partir des données de 2007 et de 2008. En 2008, les taux moyens annuels de prises aux filets maillants de 90 cm (5½ po) (nombre de poissons par filet) sont les plus élevés pour la série chronologique dans les divisions 2J et 3K, et viennent au deuxième rang dans la division 3L. Cependant, dans la sous-division 3Ps, les taux de prises depuis 2000 sont restés à un niveau nettement inférieur aux valeurs de 1996-1997. Les taux de prises au moyen de petits filets maillants (21 cm [3¼ po]) ont varié davantage et il est plus difficile de repérer les tendances, sans doute parce que les dimensions de ces filets permettent de capturer des poissons de deux tailles différentes. Dans les divisions 3K et 3L, les taux de prises à la pêche à la palangre (nombre de poissons par 1 000 hameçons) affichaient, jusqu'en 2005, des tendances semblables à celles des taux de prises aux filets maillants de 90 cm (5½ po), diminuant à partir de la fin des années 1990 jusqu'au début des années 2000, puis augmentant généralement. La baisse des taux de prises enregistrée en 2006 dans la division 3K a été suivie d'une augmentation jusqu'en 2008, année où l'on a enregistré le deuxième taux de prises le plus élevé de la série chronologique. En 2006, les taux de prises dans la division 3L avaient baissé par rapport à ceux de 2004-2005 et, en 2007-2008, ils se situent toujours aux taux de prises les plus bas pour ce genre d'engin de pêche dans la division. Dans la sous-division 3Ps, les taux de prises à la pêche à la palangre avaient diminué entre 1996 et 2000, et ensuite ils ont été variables; cependant, ils ont

généralement augmenté jusqu'en 2008. Dans la division 2J, il n'y a pas eu d'activité de pêche sentinelle à la palangre depuis 2001.

Sur les plans spatial et temporel, les taux de prises ont varié d'une année à l'autre et d'un endroit à l'autre. Les taux de prises plus élevés ont davantage été constants de Happy Adventure à Little Catalina, pour ce qui est des filets maillants de 90 cm (5½ po), et de Wesleyville à Bay de Verde, en ce qui concerne les petits filets maillants. Quant à la pêche à la palangre, les taux de prises élevés étaient plus répandus.

INTRODUCTION

Sentinel Survey projects were formally announced by the Minister of Fisheries and Oceans Canada in October 1994. The Sentinel Surveys in the Newfoundland and Labrador Region of the Department of Fisheries and Oceans (DFO) are an extension of the index fishermen's project from the Northern Cod Science Project Program with modifications to allow for science activities achievable only under a fishing moratorium. Sentinel data collection continued during the commercial/index fisheries that occurred from 1998 to 2002, and in 2006-08.

The Sentinel Survey has the following objectives:

1. To develop a catch rate series for use in resource assessments.
2. To incorporate the knowledge of inshore fish harvesters in the resource assessment process.
3. To describe the temporal-spatial distribution of Atlantic Cod in the inshore area over a number of years through, for example, the use of catch rate information, tagging studies, by-catch information and participant' observations.
4. To gather length frequencies, sex and maturity data and sample ages for use in resource assessment.
5. To establish a long-term physical oceanographic and environmental monitoring program of the inshore areas.
6. To provide a source of biological material for other researchers. For example, tissue for genetic, physiological and toxicological analyses, cod stomachs for food and feeding studies, and by-catch information.

MATERIALS AND METHODS

PARTICIPANTS

The primary collectors of data in the Sentinel Survey are inshore fish harvesters. Through consultation with inshore fisher harvesters and fisheries organizations, traditional inshore fishing grounds have been identified and mapped.

Fish harvesters from communities within the boundaries of the identified coastal areas and who met eligibility criteria were invited to apply to participate in the survey. Where more than one application was received from an area, the project partner conducted a draw or lottery to select the participant. While there was considerable interest in the project in most areas, there were many sites from which only one application was received and others where additional canvassing was required to enlist participants. Selected participants were required to complete a six-week course designed by the Marine Institute of Memorial University, in consultation with DFO. Topics covered included scientific sampling methods and equipment, computer use, resource assessment basics and presentation skills.

In order to minimize inter-annual enterprise effects on data collection, participants are expected to remain with the survey over a number of years. It is also expected that most of the sampling activities will continue once commercial fishing operations resume, and the sentinel participants will form a core of index fish harvesters.

SITES

In 2008, forty-three enterprises participated in Sentinel activities in NAFO Div. 2J3KL (down from 57 to 58 prior to 2004), and thirteen enterprises surveyed in Subdiv. 3Ps. The specific location of each site was chosen after consultation between DFO scientists, fish harvesters, the Fish, Food and Allied Workers Union (FFAW), and the Fogo Island and Petty Harbour Cooperatives (for Fogo Island and Petty Harbour). Site selection was based on the need to survey throughout inshore areas and targeted historical fishing areas and historical gear use patterns.

SAMPLING STRATEGY

Table 1 gives the homeports of participants in the Sentinel Surveys in 1995-2008; showing the number of sets completed in each year and the number of enterprises participating in the survey. The timing of sampling was determined after discussions with fish harvesters but was targeted for seasonally appropriate times based on historical fishing patterns.

Gillnets and linetrawls were used to survey inshore areas in Div. 2J3KL and Subdiv. 3Ps. Cod traps were used to varying degrees from 1998-2002 to sample fish, but are no longer used in the Sentinel Survey. Hand lines were used mostly in conjunction with nets or trawls as a means of determining the presence of Cod for tagging purposes, or when nets were not catching fish. Hand lines were used to sample Cod in several locations and information from this survey was used mainly for biological sampling as catch rate information from hand lining is difficult to interpret.

Hook and line crews fished two tubs of baited linetrawl (approximately 500 hooks per tub) each fishing day. Gillnet crews fished a maximum of six fifty-fathom, 5½ inch monofilament gillnets. Nets were rigged 2-3 to a fleet and up to three fleets were fished per fishing day. In addition, selected sites fished one small mesh gillnet (3¼ inch monofilament) tied to one 5½ inch gillnet at least one day per week. All fish caught in gillnets and on hooks were landed and measured. If catches were too large to sample effectively, the number of nets in a fleet (or number of hooks in the linetrawls) was reduced after consultation with DFO scientists. However, consideration was given to bottom topography and gear performance when decreasing the amount of gear. Other measures were considered if fish were particularly abundant in an area and catches appeared to be excessive; even with minimal amounts of gear.

Prior to the start of the survey in 1995, a fixed (i.e., control) location on the fishing grounds was established for each site, and will remain fixed for the duration of the Sentinel project. On each fishing day, up to half of the gear was set at the control site. The remainder of the gear (i.e., experimental) was set at one or two other locations on the fishing grounds at the discretion of the participants. The location of each fishing set was plotted on a nautical chart. Start time of the set and soak time for the gear were recorded. Environmental observations were also recorded, including wind direction and speed, percent cloud cover, tide conditions; presence of invertebrates and other fish species in the area (e.g., bait), marine mammals, sea birds and any other variables that might have influenced fishing behaviour were also noted. For several years selected sites were equipped with a CTD device which measures water temperature and salinity at depth. At these locations, CTD casts were conducted in the vicinity of fishing sets each fishing day. CTD locations were fished for subsequent years when possible.

When gear was retrieved, catches from control and experimental gear were kept separate and sampled on shore. All fish from gillnet, hand line and linetrawl, and a sample of the catch from traps, were measured for total length and sex. Otoliths were sampled on a fish length-stratified basis and stored in manila envelopes labeled with relevant information. Selected participants collected a sample of up to 100 frozen fish on a biweekly basis for detailed biological sampling at DFO's Northwest Atlantic Fisheries Center. Other biological samples were collected when requested.

RESULTS

Table 2 and Fig. 1 summarize Sentinel activity by gear type and NAFO Division from 1995 to 2008; including the number of sets of gear in each Division (Nhauls), the total number of fish caught (Nmeas) and the number of sets with no fish (Nzero). Gillnet (5½ inch) in 3K showed a noticeable decrease in number of fish caught despite greater effort in 2000-02. The number of gillnet sets declined in most divisions in 2003, but has remained relatively stable since then. Linetrawl effort in Div. 3K and 3L and Subdiv. 3Ps declined from 1995 to 99 and, in recent years, was much lower at 40-50 sets compared to the 130-365 sets that were done in the first three years of the survey. Sentinel linetrawl activity in Div. 2J was sporadic, and in recent years, has not been used to survey.

Forty-three inshore fishing enterprises, representing communities from Black Tickle to St. Mary's Bay, participated in the 2J3KL Sentinel Survey in 2008. In 3Ps, 13 enterprises continued to collect information. Each enterprise involved surveyed for 10 weeks in most recent years. Survey timing varied at each location as per traditional fishing seasons.

Figures 2-4 show catch per unit effort (CPUE) in scaled symbols from every set in 2007 and 2008 of 3¼ inch gillnet, 5½ inch gillnet, and linetrawl. Control sites were generally consistent from year to year but shifts in location may have resulted due to weather or tide conditions or competition for sites by commercial activity.

Figure 5 shows overall average CPUE by Division from 1995 to 2008 for the three main gear types used in Sentinel activity. Gillnet (5½ inch) catch rates in Div. 2J3KL declined from 1998 to 2002 and then increased from 2002 to 2008. In Subdiv. 3Ps, catch rates were highest in 1997, declined rapidly to 2000 and have been stable at a lower level since. Small mesh gillnet catch rates were more stable over the time series since 1998, and although it is more difficult to determine trends, a decreasing trend from 1996 to the early 2000s is apparent in Div. 3K and 3L as well as in Subdiv. 3Ps. The gear's ability to catch two distinct size ranges of fish could mask trends in either size group from year to year. Linetrawl catch rates were more variable, with the most obvious trend in Div. 3K, where catch rates declined rapidly from 1997 to 2000 and then increasing to near the series high in 2008. Linetrawl was not used extensively in Div. 3K or 3L (66 sets and 32 sets in 2008, respectively) and has not been used in Div. 2J since 2001. In Subdiv. 3Ps, where linetrawl effort was higher (253 sets in 2008), catch rates decreased from 1996-2000 then gradually increased to 2008.

Figures 6-8 give mean CPUE for gillnet and linetrawl with participants' communities listed beginning in the north, from Labrador, around the coast, to the south coast of the island. Spatially, catch rates were variable from year to year and place to place. Higher catch rates were most consistent from Happy Adventure to Little Catalina in 5½ inch gillnet, from Wesleyville to Bay de Verde in small mesh gillnet, and in linetrawl, high catch rates were more spatially widespread. Catch rates in 5½ inch gillnet were very low in northern areas in many

years and were highest around Bonavista and Little Catalina (Fig. 6). In 2007 and 2008, many locations in Div. 2J3KL had the highest catch rates in the time series, particularly in the more northern areas. In Subdiv. 3Ps, 2007 and 2008 catch rates were among the lowest in the series. Small mesh gillnet (Fig. 7) showed more variability in CPUE from year to year and between locations, with high catch rates in Div. 2J and 3K as well as Subdiv. 3Ps in some years. Catch rates were most consistent from Wesleyville to Petley. Linetrawl was not as widely used in Div. 2J3KL and catch rates were variable (Fig. 8).

Tables 3-7 compare the mean yearly catch rate to the overall mean catch rate for each participant from 1995 to 2008. Changes greater than 10% are highlighted. In 2008, 76% of participants in Div. 2J3KL had 5½ inch gillnet control sites that were similar to, or 10% higher, than the overall mean (83% for experimental sets). No sites in Subdiv. 3Ps showed higher than average catch rates in either control or experimental 5½ inch gillnet. For small mesh gillnet, 42% of participants in Div. 2J3KL had similar or increased catch rates compared to the series mean, while 2 of 5 sites in Subdiv. 3Ps had similar or increased catch rates. The majority of linetrawl sites in Div. 2J3KL showed higher than mean catch rates (10% or higher difference) for both control and experimental sets (8/12 and 6/8, respectively).

Length frequencies are shown in Figs. 21-23 as proportion at length by gear type and NAFO division. The 5½ inch gillnet frequencies (Fig. 21) show the narrowest range of size selectivity (about 50-80 cm). Given the highly selective nature of this gear, frequencies are generally the same shape from year to year, although in Div. 3K, the 1997 and 2008 frequencies seems to show a shift toward larger fish. In Div. 2J, the early years of the survey caught few fish in the 5½ inch gillnet and resulted in frequencies that were less smooth in appearance (Fig. 21, first panel).

Small mesh gillnet (3¼ inch mesh) caught primarily smaller fish (in the 35-48 cm range) but also picked up a second mode of fish in the 50-65 cm range (see Fig. 22). Changes in size distribution were difficult to detect in this gear due to its limited selection pattern.

Linetrawl had the widest range of size selection of the three gear types used in the Sentinel Survey, targeting fish from about 30 cm to 70 cm (Fig. 23). Changes in size distribution of fish were detected in this gear more readily and in Div. 3K and 3L a shift toward larger fish was evident from 2002 to 2008. In Subdiv. 3Ps, there was a shift toward larger fish from 2003 to 2006 and then smaller fish were more evident in 2007 and 2008.

Length frequencies, scaled by amount of gear used, are summarized in Fig. 24.

Figures 9-20 present weekly mean catch rates (number of fish per net or 1000 hooks) by year, Division and gear. Week 23 corresponds to June 1 in most years (week 22 in 2001-02, and 2006-07). Catch rates for Div. 2J3KL were higher in some years in late fall (weeks 44-49) in both mesh sizes of gillnet. Not all participants surveyed during this time of year (10 weeks are allocated to each participant based on traditional fishing times), but those that did generally had better catch rates. This may be due to fish moving into over-wintering areas during late fall. In Subdiv. 3Ps, catch rates in gillnets also tended to be higher later in the season. Linetrawl catch rates in Subdiv. 3Ps were higher in the fall and winter in the early part of the time series, but most years since then show similar catch rates throughout the year.

DISCUSSION

This document summarizes the catch rate trends and length frequency data for Sentinel Surveys in NAFO Div. 2J3KL and Subdiv. 3Ps in 1995-2008. Given the large spatial coverage of the survey and the differences in timing of the survey between locations, relating observations on catch rate to changes in population dynamics of Atlantic Cod requires standardizing the data for time and location effects. These analyses were undertaken and reported in Brattey et. al. (2009) for Div. 2J3KL and in the Science Advisory Report for Subdiv. 3Ps (DFO 2009). In general, trends in the unstandardized data were in agreement with results from the analyses that took time and location into account.

SUMMARY

Spatially, catch rates of Atlantic Cod have been variable from year to year and place to place. Higher catch rates have been most consistent from Happy Adventure to Little Catalina in 5½ inch gillnet, from Wesleyville to Bay de Verde in small mesh gillnet, and in linetrawl, high catch rates were more spatially widespread. In recent years, Sentinel catch rates have been increasing in 5½ inch gillnet in all NAFO areas, and in Div. 3K and 3L, 2008 catch rates were comparable to levels in 1996 to 1998. Small mesh (3¼ inch) gillnet and linetrawl trends in catch rate were less clear, but linetrawl in Div. 3K and Subdiv. 3Ps showed general increases in catch rate since about 2000.

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Table 1. Number of Sentinel Survey sets (all gears) 1995-2008.

Div.	Community	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2J	Black Tickle		48	63	54	64	42	80	72	72	80	80	69	80	79
	Williams Hr	54	48	56	50	39	49	60	45		49				
	Tub Hr	22	25	28	24	39	80	80	80						
	Triangle	24	25	29	29	62	70	80	76	78	80	80	80	80	80
	Penny's Hr	46	50	51	62	64	81	81	56	80	80	71	80	80	80
	Spear Hr	48	73	81	93	64	80	80	88	80	90	80	80	80	80
	St. Lewis		72	83	48	60	80	80	79	80	90	80	80	80	80
	Mary's Hr						76	80	80	80	79	80	72	80	80
	Cape Charles	28	36	38	32	63									
3K	Quirpon							76							
	St. Lunaire	38	52	48	55	64	60	71	76	72	77	70	69	64	58
	Great Brehat	56	73	68	76	30									
	Goose Cove	60	56	68	72	54	60	60	68	80	80	80	74	60	60
	Conche	40	48	48	48	60	60	60	60	61	60	60	60	60	60
	Englee	40	46	48	57	55	67	70	70	70	70	70	57	77	66
	Hr Deep	36	45	45	49	54	59	65	68	70	70	58	59	59	58
	Jackson's Arm	50	59	57	64	53									
	Sopp's Arm						50	60	70	70	67	69	70	46	67
	Westport						58	69	70						
	Coachman's Cove	46	58	51	52	63	70	70	70	70	70	75	63	70	70
	Ming's Bight	56	46	46	47	44	57	54	60	49	52	52	54	52	52
	La Scie	36	48	50	49	38	70	67	65	58	61	61	61	61	61
	Shoe Cove	60	54	51	53	52	60	62	60	54	54	54	54	54	54
	Smith's Hr	60	64	62	72	48	58	60	60	60	54	60	60	58	60
	Jackson's Cove	56	48	48	48	32	42	38	40						
	Miles Cove	56	76	83	83	56	55	68	59	64	70	70	69	84	75
	Glover's Hr						54	69	68	69	70	69	63	69	70
	Summerford	60	78	84	81	91	72	71	70	82	90	84	77	77	69
	Durrell	56	60	39	38	36	57	55	58						
	Too Good Arm	39	48	53	54	48	77	70	68	70	70	70	62	70	63
	Deep Bay	44	41	45	49	49									
	Fogo					64	72	108	113	71	70	70	60	60	60
	Joe Batt's Arm	48	32	40	41	80	77	71	67						
	Tilting	53	49	45	39	82	78	69	83	65	72	67	64	64	67
	Seldom	38	41	31	45	69	72	76	74	59	60	58	60	59	60
	Aspen Cove	39	42	45	32	47	59	60	55	47	61	59	60	59	45
	Lumsden	74	72	74	63	54	56	54	52	53	53	50	46	46	51
3L	Wesleyville	64	68	91	78	62	68	67	68	68	67	68			
	Newtown												64		
	Greenspond													34	45
	Centreville	40	30	32	32	20	36	40	40						
	St. Chad's	60	60	62	58										
	Happy Adventure					59	56	71	72	70	66	70	70	70	58
	Plate Cove West	39	46	52	56	48	68	70	70	70	66	70	62	70	70
	Bonavista	1	41	29	20	30	27	33	38						
	Little Catalina	60	59	67	74	36	59	44	60	60	57	60	54	60	60
	Petley	40	52	56	46	59	80	72	68	63	67	70	70	70	62
	Thorniea	60	72	72	66	48	77	84	60						
	Hopeall	40	32	32	32	32	40	50	50	50	49	50	50	50	
	Whiteway														60
	Heart's Content	57	16	40	66	48	74	60	60	60	60	59	54	50	50
	Bay de Verde		32	49	31	46	68	69	69	69	70	68	57	69	55
	Ochre Pit Cove	40	51	48	48	48	60	60	60						
	Carbonear	54	75	73	71	46	60	60	60	56	56	56	58	56	58
	Port de Grave	40		48	48	48	60	60	60						
	Foxtrap	74	62	64	65	41	46	52	52	48	48	47	48	48	48
	Pouch Cove	39	32	43	51	53	56	70	69	70	70	70	70	70	70
	Petty Hr					47	57	45	32						
	Bay Bulls	121	94	102	108	70	48	46	45	31	60	57	54	61	68
	Calvert	60	45	45	52	46	64	60	60	56	60	60	60	60	59
	Ferryland	59	44	42	39	40	51	65	68						
	Aquaforte	60	47	48	47	32	48	40	40						
	Renews	33	37	29	28	32	48	60	60	70	54	62	70	70	68
	Ft. Shott's	34	40	49	51	30	47	40	40	36	32	40	40		
	Riverhead	118	114	94	88	69	66	91	84	40	42	40	22	48	40
	Admiral's Beach	61	52	68	72	47	57	59	60	60	53	58	60	60	60
	Point Lance	58	49	48	48	6	24	36	40	36	40	40	40	40	40
3Ps	St. Bride's	163	88	70	80	2	54	63	80	59	50	61	64	70	63
	Placentia		41												
	Fox Hr	146	88	72	72	36	48	60	60	48	54	54	54	60	60
	Little Hr East	163	36	57	48	10	46	67							
	Fairhaven								73						
	Arnold's Cove	153	63	69	27	8	42								
	North Hr	118	74	70	50	20	54	55	43	46	30	57	52	56	40
	Monkstown	148	69	72	72	36	51	60	60						
	Little Paradise	52	38	44	39	35	44	63	64	42	58	52	56	66	54
	Red Hr	31	30	29	31	21	29	30	61	22	33	36	34	41	35
	Lawn		57	69	71	36	64	78	80	36	72	70	72	59	54
	Lord's Cove	47	39	40	48	36	48	60	84	47	70	72	69	80	80
	Grand Bank							60	60	38	44	44	42	42	46
	Rencontre East	180	96	71	74	35	54	72	60	20	32	48	36	36	36
	Hr Breton	158	39	27	28	32	29	31	54	34	30	34	40	30	37
	Seal Cove	204	71	44	42	33	54	46	48	9					
	Francois	181	66	74	69	18	30	36	30	25	10	42	38	28	32
	Ramea	206	46	96	60	38	82	92	82	46	36	44	44	50	50
	Burgeo		46	60	62	26	32	64	46	36	24	32	44	40	36
2J3KL # of enterprises		**52**	**54**	**55**	**56**	**57**	**57**	**58**	**57**	**43**	**44**	**43**	**44**	**42**	**42**
3Ps # of enterprises		**13**	**16**	**15**	**15**	**15**	**15**	**15**	**15**	**13**	**12**	**12**	**12**	**12**	**12**

* two enterprises

Table 2. Set details for Sentinel activity by NAFO area and gear type, 1995-2008 (Nhauls=number of sets, Nzero=number of sets with no fish, Nmeas=number of fish measured)

Gillnet 5 1/2"	2J			3K			3L			3Ps		
Year	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas
1995	218	160	118	663	150	9160	896	49	19521	760	216	37776
1996	333	295	87	866	72	33117	946	30	60891	412	10	40221
1997	319	233	544	839	55	23747	1048	18	60897	459	5	44771
1998	294	198	464	994	76	36991	1118	33	86892	525	14	31163
1999	341	228	456	1112	87	25422	1000	29	57726	234	16	6329
2000	438	300	280	1353	253	16146	1316	107	43324	424	64	5578
2001	445	363	180	1400	351	7670	1255	172	25217	497	37	5720
2002	433	318	698	1351	408	5345	1267	189	24624	499	64	4958
2003	350	240	446	1063	136	7209	801	42	24395	246	37	1648
2004	395	236	615	1102	124	14958	842	34	31808	303	33	2560
2005	354	125	1928	1085	92	25481	845	54	35027	330	50	2556
2006	345	110	2087	1068	71	28316	825	66	32538	327	30	2823
2007	360	150	1899	1068	77	36415	810	124	36760	360	25	4027
2008	356	101	2344	1067	51	49151	815	93	45948	315	27	3621

Gillnet 3 1/4"	2J			3K			3L			3Ps		
Year	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas
1995										2	0	34
1996	3	0	14	15	0	1822	9	0	500	10	0	1421
1997	49	6	2131	42	2	2299	84	7	4248	22	1	2544
1998	89	12	2265	109	6	3917	125	4	5815	29	1	1829
1999	109	27	854	92	6	2762	95	7	2793	6	1	233
2000	119	17	1707	81	11	2165	140	8	4843	48	6	1393
2001	150	41	1309	135	20	2880	132	13	3931	62	6	1831
2002	143	41	2975	132	25	2966	143	16	3857	88	8	1913
2003	118	30	1407	133	9	5654	147	10	6567	47	1	687
2004	131	20	1911	147	7	3880	126	7	4883	60	6	1351
2005	117	18	2083	125	6	5220	133	15	6269	60	8	720
2006	115	16	3240	98	6	3930	134	16	3870	61	5	1067
2007	120	31	2445	94	16	3582	127	26	4400	63	3	664
2008	119	17	2551	93	10	2950	116	25	3590	53	1	836

Linetrawl	2J			3K			3L			3Ps		
Year	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas	Nhauls	Nzero	Nmeas
1995				465	34	22681	365	48	13662	1147	55	74813
1996	20	5	75	296	16	13305	201	22	9153	555	4	61839
1997	22	15	19	262	6	23066	149	0	9938	467	4	36548
1998	8	1	26	184	9	7017	129	13	5307	315	4	20521
1999	3	3	0	116	3	3094	47	3	2072	194	13	9536
2000				91	24	967	52	6	2272	407	25	19148
2001	22	12	59	112	10	2135	106	15	3331	376	28	18274
2002				115	8	2126	62	1	1888	385	13	21224
2003				84	2	3621	59	8	1708	214	14	11612
2004				79	5	3310	47	7	2107	179	6	9301
2005				83	1	4242	53	6	2432	235	3	11341
2006				75	2	3001	36	4	952	254	6	19470
2007				85	6	4312	46	5	1507	232	5	13295
2008				66	2	3797	32	6	1123	253	7	15763

Table 3. Relative catch per unit effort trend for 3¼ inch gillnet (annual CPUE/mean CPUE for each location).

		Gillnet 3 1/4 in. Experimental												
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kad	Black Tickle				2.730								2.410		2.204
	Williams Hr			1.440					1.873		1.111				
	Tub Hr			1.536	3.034	0.474	1.079								
	Triangle			4.581	1.990				1.430						0.188
	Penny's Hr				1.723						1.320		1.403	3.112	
	Spear Hr			2.951					1.586		1.191		1.040		1.567
	St. Lewis			1.089									2.280	1.613	1.659
	Mary's Hr											2.008	1.688	1.333	1.023
	Cape Charles			1.302	1.221										
	Quirpon							1.000							
	St. Lunaire									1.430		2.326	2.600	1.451	
	Great Brehat				1.000										
	Goose Cove									1.059		1.217	1.240		
	Englee					2.271	1.576			1.416			1.108		
	Hr Deep					1.031			1.782	1.513					
	Jackson's Arm			1.706											
	Sopp's Arm								1.630			1.690	1.335		
	Westport							1.006							
Northern Inshore (3Kh+3Lab)	Coachman's Cove			2.104	1.232			1.001		1.360	1.221				
	La Scie					0.321		1.086		3.793	1.184	1.078	1.046		1.345
	Miles Cove		2.864	1.782						1.453		1.005	0.75	1.480	
	Glover's Hr							1.181	1.170		0.527			1.091	
	Summerford		2.302		1.262	1.306			1.047	1.440					
	Too Good Arm			1.242	1.217					1.036		1.497	1.185	1.009	1.088
	Deep Bay				1.121										
	Fogo								1.486			1.334			
	Joe Batt's Arm				1.819		1.009								
	Tilting											1.231	2.007	1.406	1.348
	Seldom				1.000										
	Wesleyville			1.078		1.031	1.121				1.135	1.736			
	Newtown												1.000		
	Happy Adventure						1.401	1.216		1.236					1.254
	Plate Cove West			1.084	1.407					1.481	1.109	1.284	0.730	0.578	1.471
	Little Catalina			1.549	1.561			0.719		1.277		1.544		1.245	
	Petley		1.545	1.169	1.370	1.064	1.004		1.569	1.011	0.951				
	Hopeall									1.064		0.901	1.112	1.817	
	Heart's Content							0.221	0.276	1.976	2.012	2.389	1.550	1.026	1.254
Southern Inshore (3Lfg)	Bay de Verde			2.279	2.235			0.195		1.472	1.040				
	Foxtrap		1.347	1.204	1.132	1.106		0.732		1.776		1.327	0.757	0.724	
	Pouch Cove				1.370	1.576	1.441	0.948	0.768			1.306			0.544
	Bay Bulls			4.088	2.142			0.194	0.103					1.310	
	Ferryland		1.657	2.129			0.975	1.145							
	Renews											0.362	2.241		1.358
	St. Shott's			1.592											
	Admiral's Beach		1.505	2.419	1.838	1.123	1.577	1.220		1.159					
3Ps	St. Bride's				1.302				1.220	1.336	1.331	1.570	1.198		1.446
	Little Hr East		1.420	1.832	1.061	0.676									
	Fairhaven								1.000						
	North Hr		2.614	2.254	2.750		0.519	1.484							
	Little Paradise								1.963	0.822	1.436				
	Red Hr								1.277	0.539	0.578			1.613	
	Lawn			3.920	0.782	0.514	0.740	1.001		0.228	1.544	0.213			
	Lord's Cove								2.930				1.179		

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 4. Relative catch per unit effort trend for 5½ inch control gillnet (annual CPUE/mean CPUE for each location).

		Gillnet 5 1/2 in. Control													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kad	Black Tickle											4.077	5.225		1.160
	Williams Hr	1.583		2.279	1.062		1.014				2.071				
	Tub Hr	0.183			4.668	1.009		0.151	0.61						
	Triangle			4.760	3.760								1.176	1.064	
	Penny's Hr				1.020						0.918	2.040	3.671	1.836	1.732
	Spear Hr			2.151	1.059	1.352		0.57	4.395	1.044					
	St. Lewis												1.579	5.099	4.110
	Mary's Hr											1.565	0.977		4.246
	Cape Charles				1.466	1.649									
	Quirpon							1.000							
	St. Lunaire					1.064						2.412	1.520	2.493	2.565
	Great Brehat		1.009		1.374	1.563									
	Goose Cove											3.231	2.856	2.116	2.618
	Conche											1.239	1.995	2.079	3.768
	Englee		1.069		2.147	1.111						2.245	0.986	1.585	2.922
	Hr Deep				2.780	0.908						1.576	1.354	1.641	2.186
	Jackson's Arm		1.225	1.837	1.281										
	Sopp's Arm						1.330						1.695	1.092	1.415
	Westport							1.434							
Northern Inshore (3Kfn+3Lab)	Coachman's Cove		3.106	1.661	1.959								1.695	1.326	0.973
	Ming's Bight				3.393						1.578				2.764
	La Scie		1.488		4.936	1.027							1.405		1.760
	Shoe Cove		1.204	1.509	1.921	2.026						0.983	1.104	1.063	1.287
	Smith's Hr		2.205	2.348	2.408	0.944						0.906	1.104		1.436
	Jackson's Cove		1.388	1.851	2.942										
	Miles Cove		1.961	3.902	2.825										
	Glover's Hr												3.183		2.650
	Summerford		1.542	2.146	2.764							0.936	1.214		1.353
	Durrell		1.191	1.418	1.126	2.746									
	Too Good Arm		1.086	1.029	1.149									2.857	3.140
	Deep Bay				1.510	1.729									
	Fogo					2.102		0.966					1.560	1.603	1.371
	Joe Batt's Arm		3.710		1.553										
	Tilting		1.770		1.849	1.548	1.289				0.925	1.218		1.033	2.005
	Seldom		1.583	1.000	2.332	1.534					1.017			1.193	1.871
	Aspen Cove		1.639		1.179						1.372	1.087		2.867	2.561
	Lumsden		1.893		1.219							1.384	1.428	2.931	1.660
	Wesleyville		1.583	1.523	1.895	1.961						1.049			
	Newtown												1.000		
	Greenspond														1.400
	Centreville	1.374	1.381	1.951	1.270										
	St. Chad's		0.932	1.235	1.323										
	Happy Adventure					1.381	1.828							1.183	2.155
	Plate Cove West												1.072	1.326	1.811
	Bonavista					1.263	0.985								
	Little Catalina		1.024			1.644	1.017	0.968				1.301		1.449	1.245
	Petley			0.969	1.398	0.910	1.124	1.171				0.967		1.825	1.553
	Thornlea		1.737	2.008	1.448	1.155									
	Hopeall		1.629		1.485						0.972		2.366	2.211	
	Whiteway														1.000
	Heart's Content			1.552	1.966		1.109					0.919	1.019	1.367	1.211
Southern Inshore (3Lfg)	Bay de Verde		1.348		3.213	1.209						0.923	1.057	1.002	1.606
	Ochre Pitt Cove		1.100	1.272	3.121	1.133									
	Carbonear		1.615	1.116	2.400							1.106		1.227	1.914
	Port de Grave			1.257	2.990	1.728									
	Foxtrap		1.794	1.412	2.902	1.738					0.980		1.104		
	Pouch Cove		1.881	1.223	2.485	2.197					1.354				
	Petty Hr					2.280									
	Bay Bulls		1.120	1.112	1.573	1.089					1.755	1.342	1.219	1.265	1.925
	Calvert		1.716	2.566	3.138	2.794									
	Ferryland			0.982	2.604	2.063									
	Aquaforte		1.662	2.218	1.952	1.256									
	Renews			2.071	2.160	2.045									
	St. Shott's		1.744	1.351	1.365	1.593	1.161				1.792				1.151
	Riverhead		1.690	1.041	1.310	0.919	1.303					1.092	1.232	0.907	
	Admiral's Beach		2.922	1.843	2.334	1.250	1.833					1.006			
	Point Lance	2.407	3.145	2.118	2.572						1.000				
3Ps	St. Bride's		1.163	2.781	1.305	5.420									
	Fox Hr	1.368	2.304	3.488	1.822										1.027
	Little Hr East		1.796	1.714	1.569	1.169									
	Fairhaven								1.000						
	Arnold's Cove			1.772	1.222										
	North Hr	1.373	2.785	3.418	2.878	1.567									
	Monkstown		3.186	2.183											
	Little Paradise		1.422	3.919	1.960										
	Red Hr				2.758										
	Lawn		4.144	4.312	0.934										
	Lord's Cove	3.758	2.526	2.628	1.534										
	Grand Bank														
	Rencontre East														
	Seal Cove														
	Francois														

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 3. Relative catch per unit effort trend for 3¼ inch gillnet (annual CPUE/mean CPUE for each location)

		Gillnet 3 1/4 in. Experimental													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kal	Black Tickle			0.172	2.730	0.148		0.199	0.207	0.730	0.545	0.933	2.410	0.721	2.204
	Williams Hr			1.440	0.821	0.513	0.615	0.628	1.873		1.111				
	Tub Hr		0.281	1.536	3.034	0.474	1.079	0.163	0.433						
	Triangle		0.907	4.581	1.990	0.263	0.608	0.900	1.430	0.482	0.426	0.337	0.633	0.275	0.168
	Penny's Hr		0.610	0.740	1.723	0.367	0.481	0.610	0.634	0.482	1.320	0.763	1.403	3.112	0.754
	Spear Hr		0.251	2.951	0.780	0.640	0.957	0.148	1.586	0.568	1.191	0.591	1.040	0.731	1.567
	St. Lewis			1.089	0.645	0.265	0.976	0.425	0.726	0.925	0.589	0.807	2.280	1.613	1.659
	Mary's Hr							0.290	0.631	0.507	0.520	2.008	1.688	1.333	1.023
	Cape Charles			1.302	1.221	0.477									
	Quirpon							1.000							
	St. Lunaire		0.294	0.407	0.718	0.017		0.460	0.404	1.430	0.894	2.326	2.600	1.451	
	Great Brehat				1.000										
	Goose Cove								0.904	1.059	0.944	1.217	1.240	0.887	0.750
	Englee				0.509	2.271	1.576	0.549	0.710	1.416	0.766	0.922	1.108	0.481	0.690
	Hr Deep			0.757	0.842	1.031	0.864	0.711	1.782	1.513	0.500				
	Jackson's Arm			1.706	0.716	0.578									
	Sopp's Arm								1.630	0.980	0.633	1.690	1.335	0.585	0.147
	Westport							1.006	0.994						
Northern Inshore (3Kni+3Lab)	Coachman's Cove			2.104	1.232	0.884	0.970	1.001	0.205	1.360	1.221	0.652	0.816	0.806	0.749
	La Scie			0.132	0.453	0.321	0.689	1.086	0.034	3.793	1.184	1.078	1.046	0.838	1.345
	Miles Cove		2.864	1.782	0.738	0.571	0.481	0.448	0.680	1.453	0.394	0.877	0.705	1.132	0.877
	Glover's Hr							1.181	1.170	0.933	0.527	1.005	0.756	1.480	0.947
	Summerford		2.302	0.545	1.262	1.306	0.348	0.758	1.047	1.440	0.948	0.707	0.482	1.091	0.764
	Too Good Arm			1.242	1.217	0.989	0.933	0.529	0.428	1.036	0.848	1.497	1.185	1.009	1.088
	Deep Bay				1.121	0.879									
	Fogo								1.486	0.443	0.737	1.334			
	Joe Batt's Arm				1.819	0.902	1.009	0.526	0.744						
	Tilting				0.848	0.521	0.565	0.882	0.995	0.523	0.674	1.231	2.007	1.406	1.348
	Seldom				1.000										
	Wesleyville			1.078	0.626	1.031	1.121	0.702	0.618	0.953	1.135	1.736			
	Newtown												1.000		
	Happy Adventure						1.401	1.216	0.971	1.236	0.522	0.546	0.890	0.963	1.254
	Plate Cove West			1.084	1.407	0.420	0.631	0.974	0.832	1.481	1.109	1.284	0.730	0.578	1.471
	Little Catalina			1.549	1.561	0.582	0.654	0.719	0.440	1.277	0.948	1.544	0.812	1.245	0.671
	Petley		1.545	1.169	1.370	1.064	1.004	0.556	1.569	1.011	0.951	0.632	0.428	0.891	0.811
	Hopeall							0.686	0.875	1.064	0.545	0.901	1.112	1.817	
	Heart's Content			0.059	0.639	0.283	0.318	0.221	0.273	1.976	2.012	2.389	1.550	1.026	1.254
Southern Inshore (3Ast)	Bay de Verde			2.279	2.235	0.857	0.446	0.195	0.747	1.472	1.040	0.776	0.735	0.754	0.464
	Foxtrap		1.347	1.204	1.132	1.106	0.812	0.732	0.791	1.776	0.703	1.327	0.757	0.724	0.589
	Pouch Cove			0.797	1.370	1.576	1.441	0.948	0.768	0.951	0.774	1.306	0.729	0.797	0.544
	Bay Bulls			4.088	2.142	0.282		0.194	0.103	0.226		0.452		1.310	0.203
	Ferryland		1.657	2.129	0.214	0.713	0.975	1.145	0.167						
	Renews									0.611		0.382	2.241	0.407	1.358
	St. Shott's			1.592			0.408								
	Admiral's Beach		1.505	2.419	1.838	1.123	1.577	1.220	0.714	1.159	0.704	0.327	0.099	0.106	0.211
3Ps	St. Bride's				1.302		0.467	0.542	1.220	1.336	1.331	1.570	1.198	0.588	1.446
	Little Hr East		1.420	1.832	1.061	0.678	0.452	0.557							
	Fairhaven								1.000						
	North Hr		2.614	2.254	2.750		0.519	1.484	0.260	0.363	0.635	0.336	0.332	0.315	0.138
	Little Paradise								1.963	0.822	1.436	0.405	0.695	0.695	0.984
	Red Hr								1.277	0.538	0.571			1.613	
	Lawn			3.920	0.782	0.514	0.740	1.001	0.803	0.226	1.544	0.213	0.883	0.552	0.823
	Lord's Cove								2.930	0.538	0.772	0.503	1.179	0.323	0.754

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 4. Relative catch per unit effort trend for 5½ inch control gillnet (annual CPUE/mean CPUE for each location).

		Gillnet 5 1/2 in. Control													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2J+3Kad	Black Tickle		0.007	0.103	0.566	0.069	0.165	0.033	0.079	0.470	0.373	4.078	5.226	0.670	1.163
	Williams Hr	1.593	0.345	2.279	1.062	0.239	1.014	0.306	0.095		2.071				
	Tub Hr	0.153		0.757	4.668	1.009	0.580	0.151	0.681						
	Triangle	0.093	0.400	4.760	3.760	0.280	0.280	0.252	0.295	0.158	0.224	0.588	1.176	1.064	0.672
	Penny's Hr	0.177	0.127	0.255	1.020	0.765	0.291	0.612	0.148	0.408	0.918	2.040	3.671	1.836	1.734
	Spear Hr	0.069	0.052	2.151	1.059	1.352	0.308	0.572	4.395	1.044	0.162	0.634	0.795	0.795	0.522
	St. Lewis		0.048		0.029	0.166	0.180	0.019	0.285	0.133	0.628	0.723	1.579	5.099	4.110
	Mary's Hr							0.011	0.150	0.097	0.161	1.565	0.977	0.804	4.246
	Cape Charles	0.419	0.733	0.733	1.466	1.649									
	Quirpon							1.000							
	St. Lunaire	0.177	0.670	0.222	0.426	1.064	0.596	0.517	0.192	0.846	0.600	2.112	1.520	2.493	2.565
	Great Brehat	0.239	1.005	0.828	1.371	1.553									
	Goose Cove		0.135	0.057	0.515	0.114	0.033	0.046	0.133	0.726	0.417	3.231	2.858	2.115	2.618
	Conche	0.076	0.578	0.511	0.672	0.829	0.895	0.282	0.135	0.282	0.646	1.238	1.995	2.079	3.768
	Englee	0.111	1.069	0.590	2.147	1.111	0.481	0.181	0.083	0.176	0.333	2.245	0.986	1.565	2.822
	Hr Deep	0.094	0.586	0.861	2.760	0.908	0.791	0.232	0.182	0.326	0.500	1.578	1.354	1.641	2.186
	Jackson's Arm	0.250	1.225	1.837	1.281	0.407									
	Sopp's Arm						1.330	0.502	0.833	0.598	0.659	0.881	1.686	1.092	1.418
	Westport						0.738	1.434	0.828						
Northern Inshore (3Kn+3Ki)	Coachman's Cove	0.117	3.106	1.661	1.959	0.888	0.337	0.229	0.084	0.385	0.599	0.641	1.695	1.326	0.977
	Ming's Bight				3.393	0.789	0.158	0.110	0.197	0.219	1.578	0.241	0.855	0.667	2.794
	La Scie		1.488	0.585	4.939	1.027	0.043	0.126	0.052	0.105	0.215	0.887	1.405	0.397	1.750
	Shoe Cove		1.204	1.509	1.921	2.026	0.244	0.116	0.219	0.436	0.890	0.983	1.104	1.063	1.287
	Smith's Hr	0.647	2.205	2.348	2.408	0.944	0.343	0.122	0.297	0.222	0.402	0.906	1.104	0.616	1.436
	Jackson's Cove	0.779	1.368	1.851	2.942	0.858	0.033	0.134	0.036						
	Miles Cove	0.185	1.961	3.902	2.825	0.790	0.295	0.340	0.135	0.625	0.372	0.372	0.837	0.680	0.679
	Glover's Hr						0.702	0.096	0.202	0.319	0.515	0.478	3.183	0.834	2.650
	Summerford	0.671	1.542	2.146	2.764	0.744	0.219	0.193	0.074	0.401	0.848	0.936	1.214	0.866	1.383
	Durrell	0.284	1.191	1.418	1.125	2.746	0.513	0.290	0.434						
	Too Good Arm	0.272	1.086	1.029	1.149	0.406	0.387	0.573	0.376	0.312	0.745	0.877	0.790	2.857	3.140
	Deep Bay	0.157	0.870	0.733	1.510	1.729									
	Fogo					2.102	0.617	0.966	0.403	0.105	0.520	0.452	1.860	1.603	1.371
	Joe Batt's Arm	0.441	3.710	0.588	1.553	0.859	0.580	0.140	0.128						
	Tilting	0.183	1.770	0.732	1.849	1.548	1.289	0.176	0.221	0.211	0.925	1.218	0.837	1.033	2.006
	Seldom	0.325	1.583	1.000	2.332	1.534	0.614	0.373	0.691	0.557	1.017	0.320	0.590	1.193	1.871
	Aspen Cove		1.639	0.229	1.779	0.406	0.278	0.333	0.160	0.248	1.372	1.087	0.841	2.667	2.561
	Lumsden	0.392	1.893	0.480	1.219	0.599	0.512	0.260	0.221	0.406	0.613	1.384	1.429	2.931	1.660
	Wesleyville	0.413	1.563	1.523	1.898	1.961	0.831	0.530	0.251	0.425	0.556	1.049			
	Newtown												1.000		
	Greenspond													0.591	1.409
	Centreville	1.374	1.381	1.951	1.270	0.896	0.782	0.319	0.226						
	St. Chad's	0.508	0.932	1.238	1.323										
	Happy Adventure					1.391	1.828	0.445	0.652	0.390	0.446	0.695	0.801	1.193	2.159
	Plate Cove West	0.473	0.859	1.866	2.302	0.746	0.483	0.540	0.723	0.419	0.621	0.761	1.072	1.326	1.811
	Bonavista		0.615	0.955	1.761	1.263	0.985	0.787	0.734						
	Little Catalina	0.339	1.024	1.101	1.473	1.644	1.017	0.968	0.553	0.622	0.487	1.301	0.776	1.449	1.245
	Petley	0.264	0.622	0.085	1.368	0.910	1.124	1.171	0.762	0.750	0.450	0.967	0.858	1.825	1.883
	Thornlea	0.399	1.737	2.006	1.448	1.155	0.734	0.308	0.212						
	Hopeall	0.120	1.629	0.877	1.465	0.773	0.769	0.258	0.173	0.691	0.972	0.679	2.386	2.211	
	Whiteway														1.000
	Heart's Content		0.857	1.552	1.998	0.806	1.109	0.286	0.369	0.777	0.754	0.919	1.019	1.367	1.211
Southern Inshore (3Ks)	Bay de Verde		1.348	0.787	3.213	1.209	0.486	0.173	0.252	0.382	0.580	0.923	1.057	1.002	1.608
	Ochre Pitt Cove	0.448	1.100	1.272	3.121	1.133	0.466	0.305	0.157						
	Carbonear	0.368	1.615	1.116	2.400	0.694	0.755	0.260	0.364	0.598	0.725	1.108	0.847	1.227	1.914
	Port de Grave	0.086		1.257	2.990	1.728	0.340	0.379	0.220						
	Foxtrap	0.110	1.794	1.412	2.902	1.738	0.323	0.328	0.323	0.645	0.580	0.688	1.104	0.835	0.819
	Pouch Cove	0.233	1.881	1.223	2.485	2.197	0.450	0.461	0.061	0.500	1.354	0.816	0.628	0.824	0.888
	Petty Hr					2.280	0.737	0.686	0.296						
	Bay Bulls	0.400	1.124	1.112	1.573	1.089	0.121	0.159	0.169	0.725	1.755	1.342	1.213	1.295	1.923
	Calvert		1.716	2.566	3.138	2.734	0.191	0.043	0.128	0.280	0.668	0.478	0.311	0.231	0.515
	Ferryland	0.290	0.900	0.982	2.604	2.063	0.617	0.118	0.427						
	Aquaforte	0.307	1.662	2.218	1.952	1.256	0.285	0.149	0.171						
	Renews			2.071	2.160	2.045	0.574	0.183	0.210	1.225	0.713	0.708	0.823	0.136	1.151
	St. Shott's		1.744	1.351	1.365	1.503	1.161	0.441	0.348	1.794	0.537	0.293	0.374		
	Riverhead	0.885	1.690	1.041	1.310	0.519	1.303	0.877	0.789	0.868	1.062	1.242	0.907	0.443	0.645
	Admiral's Beach	0.475	2.922	1.843	2.334	1.250	1.833	0.475	0.282	0.545	1.006	0.465	0.174	0.094	0.302
	Point Lance	2.407	3.145	2.118	2.572		0.008	0.893	0.097	1.299	1.000	0.113	0.222	0.064	
3Pn	St. Bride's	0.596	1.163	2.781	1.305	5.420	0.081	0.286	0.343	0.261	0.312	0.300	0.549	0.205	0.398
	Fox Hr	1.368	2.304	3.488	1.622	0.858	0.413	0.699	0.539	0.365	0.282	0.303	0.434	0.297	1.027
	Little Hr East	0.402	1.796	1.714	1.589	1.169	0.123	0.207							
	Fairhaven								1.000						
	Arnold's Cove	0.306		1.772	1.222		0.701								
	North Hr	1.373	2.785	3.418	2.878	1.567	0.289	0.162	0.159	0.164	0.287	0.223	0.185	0.360	0.150
	Monkstown	0.786	3.186	2.183	0.890	0.194	0.283	0.193	0.276						
	Little Paradise		1.422	3.919	1.960	0.232	0.694	0.588	0.540	0.474	0.522	0.459	0.759	0.732	0.699
	Red Hr				2.758	0.445	1.355	0.306	0.085	1.984	0.807	0.702	0.823	0.907	0.828
	Lawn		4.144	4.312	0.934	0.614	0.161	0.459	0.326	0.141	0.327	0.327	0.471	0.401	0.384
	Lord's Cove	3.758	2.526	2.628	1.534	0.571	0.513	0.364	0.386	0.398	0.323	0.167	0.173	0.283	0.395
	Grand Bank							1.506	0.508	0.381	1.415	0.992	0.328	2.248	0.649
	Rencontre East				1.000										
	Seal Cove				0.282	0.626	4.007	0.519	0.353	0.202					
	Francois								1.000						

no survey
> 10% of series mean
within 10% of series mean
< 10% of series mean

Table 5. Relative catch per unit effort trend for 5½ inch experimental gillnet (annual CPUE/mean CPUE for each location).

		Gillnet 5 1/2 in. Experimental													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kad	Black Tickle										1.499	3.630	1.461	2.088	2.416
	Williams Hr					1.413			0.905		3.859				
	Tub Hr			1.354	1.692	3.309									
	Triangle			1.961	2.096	1.207						1.140	1.893	1.240	1.340
	Penny's Hr			1.881								1.817	1.696	3.477	2.240
	Spear Hr												2.051	2.383	3.933
	St. Lewis											2.491	2.539	2.624	2.819
	Mary's Hr											0.974	1.169	2.031	2.989
	Cape Charles	1.574				2.132									
	Quirpon							1.000							
	St. Lunaire											2.650	2.030	1.978	3.319
	Great Brehat		1.224		2.139										
	Goose Cove					2.035	1.230					2.221	1.185	1.420	1.500
	Conche											1.507	1.473	2.087	4.168
	Englee		1.152			2.155						1.595	1.597	1.511	2.400
	Hr Deep	1.062	2.004	1.472	2.884	1.040						1.200		0.930	1.244
	Jackson's Arm		2.234	1.328	0.948										
	Sopp's Arm											1.000	1.009	2.288	2.020
	Westport							1.260							
Northern Inshore (3Kh+3Lab)	Coachman's Cove		2.758	1.730	1.506							1.029	1.924	1.155	1.481
	Ming's Bight				1.271							1.140	1.730	2.424	1.522
	La Scie		1.234		3.842	0.965						0.996	1.389		2.095
	Shoe Cove		1.306		1.512	1.043					0.931	1.671	1.907	0.957	1.649
	Smith's Hr		1.546	2.482	2.320	0.940							1.369		2.011
	Jackson's Cove	1.114	1.729	1.773	1.985	0.915									
	Miles Cove		2.033	1.957	1.655										2.116
	Glover's Hr											1.137	1.679	2.531	2.282
	Summerford		1.755	1.936	2.321						1.271	0.912	1.368		1.504
	Durrell		1.529	1.033	1.101	1.998									
	Too Good Arm		2.138	0.964	1.519							1.051	1.012	1.735	2.770
	Deep Bay				2.094	1.439									
	Fogo					1.340						1.269	1.052	1.954	2.339
	Joe Batt's Arm		4.282		1.177		0.950								
	Tilting		1.253		1.864	1.730	1.580	0.230	0.222				1.240	1.465	2.127
	Seldom		1.476		3.920	1.764		0.308	0.119					1.401	1.828
	Aspen Cove		0.904		1.360		0.208	0.138	0.208	0.111	1.087	1.423	1.046	2.130	3.272
	Lumsden		1.421		1.180			0.208	0.154			1.194	1.267	2.846	2.163
	Wesleyville		1.033	1.565	1.742	2.074	1.059				0.971				
	Newtown												1.000		
	Greenspond														1.516
	Centreville	1.272	1.622	1.679	1.322										
	St. Chad's		1.064	1.146	1.475										
	Happy Adventure					0.999	1.150						1.409	1.554	1.730
	Plate Cove West		1.179	1.269	1.617			0.926			0.941		1.193	1.185	1.825
	Bonavista				1.309		2.124								
	Little Catalina		1.253	0.924	1.493	1.714	1.106		1.073			1.307		1.083	1.004
	Petley		1.039	1.333	1.880	1.218	0.969		0.954	0.972	1.107	0.936			
	Thornlea		1.731	2.945	1.061										
	Hopeall		1.194	1.231	1.868								2.117	2.395	
	Whiteway														1.000
	Heart's Content			1.543	1.395							1.457	1.065	1.585	1.712
Southern Inshore (3Lfg)	Bay de Verde		1.029	1.067	3.744	0.954								0.964	1.374
	Ochre Pit Cove		1.477		3.246	1.105									
	Carbonear		1.400		1.783						0.910	1.523	1.400	1.370	1.897
	Port de Grave			1.783	2.934	1.528									
	Foxtrap		0.957	1.192	2.205	1.465					1.131	1.277	1.347	1.207	1.043
	Pouch Cove		1.272	1.228	2.967	2.604					1.583		1.170		
	Petty Hr					2.434									
	Bay Bulls		1.731	1.614	2.233						0.905	1.137		1.208	1.274
	Calvert		1.446	1.170	2.788	2.721					1.196				
	Ferryland														
	Aquaforte		1.101	2.430	2.063	1.283									
	Renews			2.701	2.401	2.217					1.168	1.052			
	St. Shott's		2.558	1.322	1.729	1.725					1.052				
	Riverhead		0.967		1.287	1.322	1.289			1.205		1.509			1.256
	Admiral's Beach		2.438	2.142	2.220	2.099	2.152								
	Point Lance	2.180	3.723	2.121	3.659										
3Ps	St. Bride's		1.803	3.439	2.867										
	Fox Hr	1.832	3.262	3.088	1.341										
	Little Hr East		1.865	1.461	1.605	1.229									
	Fairhaven								1.000						
	Arnold's Cove			1.822	1.911		1.055								
	North Hr	1.132	2.974	2.873	2.787	1.557									
	Monkstown	0.921	2.533	2.202	1.250										
	Little Paradise			3.514	3.422										
	Red Hr			2.557	1.839		1.201		0.611		1.716				
	Lawn		1.763	4.941	1.013			0.913							
	Lord's Cove	4.922	3.441	2.105	0.945										
	Grand Bank							2.208			1.329	1.344		1.059	
	Rencontre East														
	Hr Breton					1.000									
	Seal Cove			1.336	1.085	2.367			1.106						
	Francois								1.000						

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 6. Relative catch per unit effort trend for linetrawl control sites (annual CPUE/mean CPUE for each location).

		Linetrawl Control													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kad	Tub Hr		1.667	[illegible]	2.000										
	Penny's Hr							1.000							
	Cape Charles		1.701	[illegible]											
	Goose Cove	[illegible]	[illegible]	3.783	1.153	[illegible]	[illegible]		[illegible]						
	Englee													[illegible]	1.432
	Coachman's Cove	[illegible]	[illegible]	1.423	[illegible]	[illegible]	[illegible]	1.473	[illegible]	[illegible]	1.277	2.186	[illegible]	2.339	[illegible]
	Ming's Bight	1.507	1.227	2.134	0.906	[illegible]	[illegible]	[illegible]	0.662	[illegible]	1.234	1.651	0.929	1.203	[illegible]
Northern Inshore (3Kh+3Lab)	La Scie	1.136	1.327	2.206	[illegible]	[illegible]		[illegible]	[illegible]	1.260	0.918	[illegible]	0.983	1.518	1.089
	Shoe Cove	0.977	0.986	1.910	[illegible]	[illegible]	[illegible]	0.720	[illegible]	1.129	[illegible]	1.251	1.087	1.743	0.967
	Durrell	1.735	1.458	2.481	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
	Deep Bay	[illegible]	[illegible]	1.674											
	Fogo					1.000									
	Joe Batt's Arm	1.038	[illegible]	1.515	0.919										
	Tilting	[illegible]	[illegible]	1.465	1.199										
	Seldom			1.000											
	Aspen Cove	1.747	[illegible]	2.352	[illegible]	0.961	[illegible]	[illegible]	[illegible]	0.915	1.411	1.085	[illegible]	[illegible]	1.173
	Lumsden	[illegible]	1.302	1.221	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.048	1.014	1.338	1.052	1.059	2.256
	Wesleyville	[illegible]	1.043	1.271	[illegible]	0.995	1.388	0.916	[illegible]	1.238	1.010	1.049			
	Newtown												1.000		
	Greenspond													0.980	1.020
	Happy Adventure							1.000							
	Bonavista	1.320		1.247	[illegible]			1.216	[illegible]						
	Heart's Content	1.101		1.529	1.477			[illegible]	[illegible]						
	Carbonear	0.953	[illegible]	1.061	[illegible]	[illegible]		[illegible]	1.247	[illegible]	1.343	1.272	1.379	1.080	1.582
Southern Inshore (3Lfg)	Foxtrap	[illegible]	1.947	2.237	[illegible]	1.137	[illegible]	1.504	[illegible]	[illegible]	[illegible]	0.943	[illegible]	1.203	1.048
	Bay Bulls	1.635						[illegible]				[illegible]			
	Calvert	1.651	1.629	1.789	1.438	[illegible]	[illegible]	[illegible]		[illegible]					
	Aquaforte		1.000												
	Renews	[illegible]	[illegible]	2.176											
	St. Shott's	[illegible]	1.247												
	Riverhead	[illegible]	[illegible]	1.120	1.102	2.197	[illegible]	[illegible]	[illegible]	[illegible]	2.004	1.488	0.982	1.054	[illegible]
	Point Lance							2.258		[illegible]	[illegible]	[illegible]	1.429	1.925	[illegible]
	Placentia		1.000												
3Ps	Arnold's Cove	1.390	1.897	1.361	0.916	[illegible]	[illegible]								
	Little Paradise	2.254	1.528	1.896	0.931	[illegible]	0.985	1.391	0.964	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Red Hr	1.558	1.528	1.567	1.230	[illegible]	[illegible]	[illegible]	0.964	1.483	[illegible]	[illegible]	0.916	0.919	1.176
	Lawn		1.000												
	Lord's Cove	1.465							0.535						
	Grand Bank							1.307	1.118	[illegible]	0.921	1.308	1.568	[illegible]	[illegible]
	Rencontre East	1.306	2.143	1.680	1.385	1.455	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Hr Breton	1.117	2.460	1.249	1.183	[illegible]	0.961	[illegible]	[illegible]	[illegible]	0.960	[illegible]	1.174	1.052	[illegible]
	Seal Cove	1.438	2.468	1.895	[illegible]	0.947	1.033	[illegible]	[illegible]	[illegible]					
	Francois	1.177	1.740	[illegible]	[illegible]	[illegible]	[illegible]	0.965	[illegible]	[illegible]	[illegible]	[illegible]	1.360	1.606	1.618
	Ramea	1.103	1.588	1.071	1.000	[illegible]	[illegible]	[illegible]	1.150	1.415	[illegible]	[illegible]	1.139	1.131	1.009
	Burgeo		1.630	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.153	1.077	1.679	[illegible]	1.577	[illegible]	1.243

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 5. Relative catch per unit effort trend for 5½ inch experimental gillnet (annual CPUE/mean CPUE for each location)

		Gillnet 5 1/2 in. Experimental													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jn + 3Kd	Black Tickle		0.067	0.097	0.254	0.147	0.704	0.162	0.024	0.452	1.499	3.630	1.461	2.088	2.418
	Williams Hr	0.323	0.345	0.369	0.582	1.413	0.762	0.411	2.905		3.859				
	Tub Hr	0.164		1.354	1.692	3.309	0.474	0.602	0.408						
	Triangle	0.197	0.554	1.961	2.096	1.207	0.210	0.511	0.539	0.504	0.809	1.140	1.893	1.240	1.340
	Penny's Hr	0.085	0.037	1.881	0.627	0.608	0.363	0.164	0.210	0.206	0.648	1.817	1.636	3.477	2.240
	Spear Hr	0.095	0.148	0.687	0.711	0.845	0.414	0.164	0.740	0.578	0.420	0.801	2.081	2.383	3.933
	St. Lewis		0.039	0.129	0.196	0.065	0.182	0.134	0.218	0.850	0.717	2.491	2.539	2.624	2.819
	Mary's Hr							0.094	0.209	0.356	0.177	0.974	1.169	2.031	3.989
	Cape Charles	1.574	0.413	0.881		2.132									
	Quirpon							1.000							
	St. Lunaire	0.029	0.552	0.352	0.251	0.554	0.545	0.370	0.127	0.641	0.393	2.650	2.039	1.978	3.519
	Great Brehat	0.272	1.224	0.839	2.138	0.526									
	Goose Cove		0.405	0.400	0.850	2.035	1.230	0.351	0.248	0.685	0.471	2.221	1.185	1.420	1.500
	Conche	0.157	0.831	0.469	0.846	0.641	0.597	0.228	0.069	0.364	0.544	1.507	1.473	2.087	4.158
	Englee	0.060	1.152	0.880	0.858	2.155	0.553	0.287	0.082	0.376	0.471	1.595	1.597	1.511	2.400
	Hr Deep	1.062	2.004	1.472	2.884	1.040	0.391	0.199	0.094	0.374	0.207	1.200	0.900	0.831	1.244
	Jackson's Arm	0.255	2.234	1.328	0.948	0.235									
	Sopp's Arm						0.819	0.335	0.348	0.675	0.507	1.005	1.008	2.286	2.020
	Westport						0.854	1.260	0.886						
3Kn + 3Ki	Coachman's Cove	0.235	2.758	1.730	1.806	0.509	0.228	0.110	0.136	0.342	0.555	1.022	1.924	1.155	1.481
	Ming's Bight				1.271	0.724	0.555	0.487	0.236	0.270	0.641	1.140	1.730	2.424	1.527
	La Scie		1.234	0.571	3.842	0.965	0.200	0.069	0.122	0.507	0.429	0.992	1.389	0.581	2.095
	Shoe Cove		1.306	0.607	1.512	1.043	0.409	0.161	0.285	0.533	0.931	1.670	1.907	0.951	1.649
	Smith's Hr	0.891	1.546	2.462	2.320	0.940	0.255	0.152	0.077	0.333	0.370	0.538	1.369	0.735	2.011
	Jackson's Cove	1.114	1.723	1.773	1.985	0.915	0.129	0.206	0.156						
	Miles Cove	0.804	2.033	1.957	1.655	0.330	0.280	0.287	0.258	0.804	0.895	0.815	0.869	0.899	2.116
	Glover's Hr						0.325	0.076	0.269	0.304	0.395	1.137	1.679	2.331	2.281
	Summerford	0.619	1.755	1.936	2.321	0.693	0.184	0.184	0.132	0.476	1.271	0.912	1.368	0.844	1.504
	Durrell	0.709	1.520	1.033	1.101	1.998	0.481	0.572	0.586						
	Too Good Arm	0.431	2.136	0.964	1.519	0.465	0.500	0.234	0.232	0.241	0.707	1.051	0.912	1.735	2.770
	Deep Bay	0.124	0.753	0.650	2.034	1.439									
	Fogo					1.340	0.851	0.251	0.144	0.237	0.564	1.269	1.052	1.954	2.339
	Joe Batt's Arm	0.051	4.282	0.532	1.177	0.621	0.959	0.166	0.222						
	Tilting	0.130	1.253	0.462	1.864	1.730	1.560	0.230	0.222	0.126	0.870	0.702	1.240	1.465	2.127
	Seldom	0.130	1.476	0.850	3.920	1.764	0.501	0.303	0.119	0.284	0.492	0.273	0.659	1.401	1.828
	Aspen Cove		0.994	0.630	1.360	0.475	0.206	0.149	0.204	0.115	0.787	1.423	1.046	2.130	3.272
	Lumsden	0.433	1.421	0.860	1.180	0.628	0.565	0.293	0.154	0.346	0.653	1.194	1.267	2.846	2.163
	Wesleyville	0.646	1.033	1.555	1.742	2.074	1.059	0.547	0.294	0.502	0.971	0.576			
	Newtown												1.500		
	Greenspond													0.484	1.516
	Centreville	1.272	1.622	1.679	1.322	0.586	0.882	0.401	0.258						
	St. Chad's	0.314	1.064	1.146	1.475										
	Happy Adventure					0.999	1.150	0.622	0.536	0.613	0.522	0.867	1.409	1.554	1.730
	Plate Cove West	0.340	1.179	1.289	1.617	0.862	0.677	0.426	0.739	0.480	0.941	0.747	1.193	1.185	1.825
	Bonavista		0.511	0.623	1.309	0.822	2.124	0.711	0.899						
	Little Catalina	0.372	1.253	0.924	1.493	1.714	1.106	0.651	1.073	0.616	0.618	1.307	0.785	1.083	1.004
	Petley	0.483	1.038	1.333	1.880	1.218	0.969	0.705	0.954	0.972	1.107	0.916	0.840	0.697	0.669
	Thornlea	0.257	1.731	2.345	1.661	0.599	0.811	0.634	0.561						
	Hopeall	0.199	1.194	1.231	1.866	0.787	0.772	0.285	0.265	0.661	0.782	0.448	2.117	2.395	
	Whiteway														1.000
	Heart's Content		0.599	1.543	1.395	0.656	0.719	0.389	0.465	0.734	0.682	1.457	1.445	1.585	1.717
3Ps	Bay de Verde		1.329	1.007	3.744	0.954	0.597	0.216	0.264	0.456	0.655	0.802	0.878	0.965	1.374
	Ochre Pitt Cove	0.202	1.477	0.566	3.249	1.105	0.622	0.278	0.201						
	Carbonear	0.361	1.400	0.870	1.783	0.761	0.509	0.188	0.328	0.699	0.910	1.523	1.400	1.370	1.897
	Port de Grave	0.069		1.783	2.934	1.528	0.225	0.234	0.229						
	Foxtrap	0.070	0.957	1.192	2.205	1.465	0.483	0.339	0.397	0.886	1.131	1.277	1.347	1.207	1.141
	Pouch Cove	0.089	1.272	1.228	2.967	2.604	0.357	0.328	0.082	0.482	1.583	0.586	1.170	0.593	0.660
	Petty Hr					2.434	0.807	0.426	0.333						
	Bay Bulls	0.385	1.731	1.614	2.233	1.315	0.158	0.261	0.280	0.756	0.995	1.137	0.745	1.208	1.274
	Calvert		1.446	1.170	2.788	2.721	0.180	0.149	0.106	0.664	1.196	0.795	0.690	0.396	0.700
	Ferryland	0.232	0.706	1.262	2.056	2.565	0.585	0.243	0.351						
	Aquaforte	0.413	1.101	2.430	2.063	1.283	0.355	0.216	0.139						
	Renews			2.701	2.407	2.217	0.424	0.217	0.206	0.318	1.166	1.082	0.455	0.112	0.726
	St. Shott's		2.558	1.322	1.729	1.726	0.704	0.329	0.085	0.607	1.662	0.588	0.300		
	Riverhead	0.338	0.967	0.851	1.287	1.322	1.269	0.728	0.689	1.205	0.824	1.508	0.864	0.891	1.256
	Admiral's Beach	0.310	2.438	2.142	2.220	2.099	2.152	0.718	0.286	0.442	0.565	0.316	0.088	0.117	0.106
	Point Lance	2.180	3.723	2.121	3.659	0.014	0.023	0.368	0.165	0.637	0.722	0.128	0.103	0.100	0.060
	St. Bride's	0.865	1.803	3.439	2.867		0.347	0.559	0.345	0.435	0.426	0.266	0.550	0.422	0.676
	Fox Hr	1.832	3.282	3.088	1.341	0.864	0.311	0.644	0.390	0.184	0.211	0.244	0.473	0.412	0.723
	Little Hr East	0.439	1.865	1.481	1.605	1.229	0.200	0.181							
	Fairhaven								1.000						
	Arnold's Cove	0.212		1.822	1.911		1.059								
	North Hr	1.132	2.974	2.873	2.787	1.557	0.659	0.405	0.134	0.159	0.464	0.336	0.158	0.241	0.121
	Monkstown	0.921	2.533	2.202	1.250	0.246	0.345	0.228	0.275						
	Little Paradise		0.762	3.314	3.422	0.334	0.586	0.546	0.522	0.425	0.459	0.352	0.583	0.919	0.780
	Red Hr			2.557	1.839	0.532	1.201	0.458	0.616	1.716	0.497	0.817	0.393	0.752	0.623
	Lawn		1.763	4.941	1.015	0.554	0.342	0.911	0.496	0.137	0.755	0.195	0.783	0.419	0.690
	Lord's Cove	4.922	3.441	2.109	0.945	0.320	0.308	0.266	0.368	0.211	0.262	0.151	0.188	0.237	0.273
	Grand Bank							2.208	0.571	0.724	1.323	1.344	0.409	1.195	0.362
	Rencontre East			0.497	1.503										
	Hr Breton					1.000									
	Seal Cove			1.336	1.185	2.367		0.864	1.176	0.242					
	Francois								1.000						

No survey
< 10% of series mean
within 10% of series mean
>10% of series mean

Table 6. Relative catch per unit effort trend for linetrawl control sites (annual CPUE/mean CPUE for each location)

		Linetrawl Control													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	Tub Hr		1.667	0.333	2.000										
2Jn+3K	Penny's Hr							1.000							
2Jn+3K	Cape Charles		1.701	0.299											
2Jn+3K	Goose Cove	0.803	0.835	3.783	1.153	0.439	0.852		0.135						
2Jn+3K	Englee													0.568	1.432
2Jn+3K	Coachman's Cove	0.669	0.873	1.429	0.663	0.457	0.111	1.473	0.460	0.516	1.277	2.186	0.663	2.339	0.884
2Jn+3K	Ming's Bight	1.507	1.227	2.134	0.906	0.208	0.217	0.472	0.657	0.801	1.234	1.651	0.529	1.203	0.852
Northern Peninsula (2Kn+3Ln)	La Scie	1.136	1.327	2.206	0.551	0.533		0.382	0.249	1.280	0.918	0.826	0.983	1.518	1.089
Northern Peninsula (2Kn+3Ln)	Shoe Cove	0.977	0.986	1.910	0.847	0.566	0.458	0.720	0.569	1.129	0.790	1.251	1.087	1.743	0.967
Northern Peninsula (2Kn+3Ln)	Durrell	1.735	1.458	2.481	0.662	0.570	0.586	0.139	0.370						
Northern Peninsula (2Kn+3Ln)	Deep Bay	0.507	0.820	1.674											
Northern Peninsula (2Kn+3Ln)	Fogo					1.000									
Northern Peninsula (2Kn+3Ln)	Joe Batt's Arm	1.038	0.528	1.515	0.919										
Northern Peninsula (2Kn+3Ln)	Tilting	0.810	0.526	1.465	1.199										
Northern Peninsula (2Kn+3Ln)	Seldom			1.000											
Northern Peninsula (2Kn+3Ln)	Aspen Cove	1.747	0.553	2.352	0.829	0.961	0.247	0.614	0.645	0.915	1.411	1.085	0.881	0.588	1.173
Northern Peninsula (2Kn+3Ln)	Lumsden	0.676	1.302	1.221	0.864	0.721	0.545	0.435	0.470	1.046	1.014	1.338	1.052	1.056	2.256
Northern Peninsula (2Kn+3Ln)	Wesleyville	0.726	1.043	1.271	0.752	0.995	1.368	0.916	0.632	1.238	1.010	1.049			
Northern Peninsula (2Kn+3Ln)	Newtown												1.000		
Northern Peninsula (2Kn+3Ln)	Greenspond													0.980	1.020
Northern Peninsula (2Kn+3Ln)	Happy Adventure							1.000							
Northern Peninsula (2Kn+3Ln)	Bonavista	1.320		1.247	0.656			1.216	0.562						
Northern Peninsula (2Kn+3Ln)	Heart's Content	1.101		1.529	1.477			0.408	0.486						
Northern Peninsula (2Kn+3Ln)	Carbonear	0.953	0.885	1.061	0.252	0.852		0.537	1.247	0.547	1.343	1.272	1.379	1.080	1.592
Eastern Avalon (3Lfe)	Foxtrap	0.895	1.947	2.237	0.550	1.137	0.802	1.504	0.157	0.296	0.864	0.943	0.417	1.203	1.048
Eastern Avalon (3Lfe)	Bay Bulls	1.635						0.601				0.764			
Eastern Avalon (3Lfe)	Calvert	1.651	1.629	1.769	1.438	0.298	0.362	0.295		0.557					
Eastern Avalon (3Lfe)	Aquaforte		1.000												
Eastern Avalon (3Lfe)	Renews	0.109	0.715	2.176											
Eastern Avalon (3Lfe)	St. Shott's	0.753	1.247												
Eastern Avalon (3Lfe)	Riverhead	0.530	0.580	1.120	1.102	2.197	0.565	0.430	0.373	0.708	2.004	1.488	0.982	1.054	0.867
Eastern Avalon (3Lfe)	Point Lance							2.256		0.474	0.511	0.180	1.429	1.925	0.226
Eastern Avalon (3Lfe)	Placentia		1.000												
3Ps	Arnold's Cove	1.390	1.897	1.361	0.916	0.227	0.208								
3Ps	Little Paradise	2.254	1.528	1.896	0.931	0.601	0.985	1.391	0.964	0.569	0.418	0.430	0.796	0.522	0.713
3Ps	Red Hr	1.556	1.528	1.567	1.230	0.454	0.877	0.466	0.964	1.483	0.350	0.510	0.916	0.919	1.178
3Ps	Lawn		1.000												
3Ps	Lord's Cove	1.465							0.535						
3Ps	Grand Bank							1.397	1.118	0.827	0.921	1.308	1.568	0.177	0.684
3Ps	Rencontre East	1.306	2.143	1.680	1.385	1.455	0.738	0.641	0.811	0.681	0.622	0.833	0.598	0.489	0.617
3Ps	Hr Breton	1.117	2.460	1.249	1.183	0.528	0.961	0.721	0.472	0.390	0.960	0.858	1.174	1.052	0.874
3Ps	Seal Cove	1.438	2.468	1.895	0.639	0.947	1.033	0.182	0.324	0.073					
3Ps	Francois	1.177	1.740	0.885	0.794	0.633	0.470	0.965	0.776	0.699	0.592	0.685	1.360	1.606	1.618
3Ps	Ramea	1.103	1.588	1.071	1.000	0.692	0.487	0.778	1.150	1.415	0.779	0.657	1.139	1.131	1.009
3Ps	Burgeo		1.630	0.791	0.736	0.515	0.455	0.402	1.153	1.077	1.679	0.876	1.577	0.864	1.243

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 7. Relative catch per unit effort trend for linetrawl experimental sites (annual CPUE/mean CPUE for each location).

		Linetrawl Experimental													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kad	Black Tickle							1.000							
	Williams Hr							1.000							
	Tub Hr		1.639		1.735			1.627							
	Triangle							1.000							
	Penny's Hr							1.000							
	Cape Charles		1.695	0.305											
	Goose Cove	0.727	0.758	1.515											
	Englee													1.000	
	Sopp's Arm							1.000							
Northern Inshore (3Kh+3Lab)	Coachman's Cove	1.798	1.363				0.193		0.846			1.028	0.771		
	Ming's Bight	1.527	1.090	2.154	0.923	0.184	0.295	0.368	0.665	0.929	1.075	1.926	0.816	1.352	0.675
	La Scie	0.977	1.249	2.367	0.607	0.550		0.337	0.242	1.089	0.917	0.898	1.168	1.666	0.934
	Shoe Cove	0.947	1.058	2.122	0.833	0.491	0.429	0.526	0.657	1.234	0.850	1.051	1.257	1.778	0.968
	Durrell	1.512	1.720	2.231	0.704	0.495	0.270	0.095							
	Deep Bay	0.420	0.974	1.605											
	Fogo					1.000									
	Joe Batt's Arm	0.960	0.514	1.627	0.899										
	Tilting	1.360	0.863	1.344	1.208					0.224					
	Seldom			1.000											
	Aspen Cove	1.599	1.106	2.559	0.920	0.794	0.204	0.454	0.562	1.381	1.055	1.042	0.725	0.508	
	Lumsden	0.780	1.326	1.171	0.792	0.696	0.533	0.404	0.462	1.016	0.944	1.144	1.301	0.952	2.479
	Wesleyville	0.718	1.403	0.986	0.601	0.893	1.181	0.845	0.565	1.203	1.307	1.298			
	Newtown												1.000		
	Happy Adventure							1.000							
	Bonavista	1.187	1.347	1.247	0.590			1.093	0.537						
	Petley							1.000							
	Heart's Content	1.270		1.555	1.454			0.321	0.400						
Southern Inshore (3Lfq)	Carbonear	1.114	1.010	0.708	0.168	0.811		0.459	0.971	0.635	1.716	1.100	1.520	0.894	1.895
	Foxtrap	1.087	2.159	2.211	0.584	1.185	0.736	1.022	0.143	0.266	0.796	0.929	0.451	1.335	1.074
	Bay Bulls	1.000													
	Calvert	1.639	1.900	1.319	1.161	0.416	0.451	0.200		0.845					
	Aquaforte		1.000												
	Renews	0.265	1.735												
	St. Shott's	0.771	1.229												
	Riverhead	0.420	0.546	0.922	1.112	2.317	0.374	0.317	0.260	0.668	2.070	1.771	1.014	1.245	0.943
	Point Lance							0.667		0.558	0.590	0.231	2.130	2.438	0.385
3Ps	Placentia		1.000												
	Arnold's Cove	1.201	1.815	1.132	1.233	0.460	0.160								
	Little Paradise	2.582	1.355	1.880	0.929	0.650	0.980	1.317	1.064	0.479	0.351	0.369	0.708	0.586	0.750
	Red Hr	1.463	1.455	1.443	1.119	0.310	0.901	0.519	1.121	1.730		0.051	0.994	0.777	1.119
	Lawn		1.000												
	Lord's Cove	1.522							0.478						
	Grand Bank							1.454	0.997	0.783	0.993	1.269	1.503	0.237	0.764
	Rencontre East	1.330	2.273	1.856	1.427	1.610	0.664	0.757	0.784	0.589	0.537	0.684	0.566	0.421	0.502
	Hr Breton	1.189	2.235	1.102	1.166	0.547	0.918	0.657	0.377	0.500	1.171	0.935	1.189	1.047	0.968
	Seal Cove	1.645	2.387	1.920	0.675	0.649	1.037	0.201	0.417	0.070					
	Francois	1.398	1.575	0.843	0.796	0.549	0.457	0.906	0.755	0.560	0.612	0.814	1.406	1.715	1.614
	Ramea	1.241	1.706	1.123	0.985	0.802	0.512	0.806	1.724	0.988	0.612	0.600	1.127	0.908	0.866
	Burgeo		1.419	0.861	0.701	0.585	0.447	0.473	1.216	0.884	1.609	0.914	1.686	0.857	1.333

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

Table 7. Relative catch per unit effort trend for linetrawl experimental sites (annual CPUE/mean CPUE for each location).

		Linetrawl Experimental													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
2Jm+3Kad	Black Tickle							1.000							
	Williams Hr							1.000							
	Tub Hr		1.638		1.735			1.627							
	Triangle							1.000							
	Penny's Hr							1.000							
	Cape Charles		1.695												
	Goose Cove			1.515											
	Englee													1.000	
	Sopp's Arm							1.000							
Northern Inshore (3Kh+3Lab)	Coachman's Cove	1.798	1.363									1.028			
	Ming's Bight	1.527	1.090	2.154	0.923					0.929	1.075	1.926		1.352	
	La Scie	0.977	1.249	2.367						1.089	0.917		1.168	1.666	0.934
	Shoe Cove	0.947	1.058	2.122						1.234		1.051	1.257	1.778	0.968
	Durrell	1.512	1.720	2.231											
	Deep Bay		0.974	1.605											
	Fogo					1.000									
	Joe Batt's Arm	0.960		1.627											
	Tilting	1.380		1.344	1.208										
	Seldom			1.000											
	Aspen Cove	1.590	1.106	2.559	0.920					1.381	1.055	1.042			
	Lumsden		1.326	1.171						1.016	0.944	1.144	1.301	0.952	2.479
	Wesleyville		1.403	0.986			1.181			1.203	1.307	1.298			
	Newtown												1.000		
	Happy Adventure							1.000							
	Bonavista	1.187	1.347	1.247				1.093							
	Petley							1.000							
	Heart's Content	1.270		1.555	1.454										
Southern Inshore (3Lpq)	Carbonear	1.114	1.010						0.971		1.716	1.100	1.520		1.895
	Foxtrap	1.087	2.159	2.211		1.185		1.022				0.929		1.335	1.074
	Bay Bulls	1.000													
	Calvert	1.639	1.900	1.319	1.161										
	Aquaforte		1.000												
	Renews		1.735												
	St. Shott's		1.229												
	Riverhead			0.922	1.112	2.317					2.070	1.771	1.014	1.245	0.943
	Point Lance												2.130	2.438	
3Ps	Placentia		1.000												
	Arnold's Cove	1.201	1.615	1.132	1.233										
	Little Paradise	2.582	1.355	1.880	0.929		0.980	1.317	1.064						
	Red Hr	1.403	1.455	1.443	1.119		0.901		1.121	1.730			0.994		1.119
	Lawn		1.000												
	Lord's Cove	1.522													
	Grand Bank							1.454	0.997		0.993	1.269	1.503		
	Rencontre East	1.330	2.273	1.856	1.427	1.610									
	Hr Breton	1.189	2.235	1.102	1.166		0.918				1.171	0.935	1.189	1.047	0.968
	Seal Cove	1.645	2.387	1.920			1.037								
	Francois	1.398	1.575					0.906					1.408	1.715	1.614
	Ramea	1.241	1.706	1.123	0.985				1.724	0.988			1.127	0.908	
	Burgeo		1.419						1.216		1.609	0.914			1.333

no survey
> 10% of series mean
within 10% of series mean
<10% of series mean

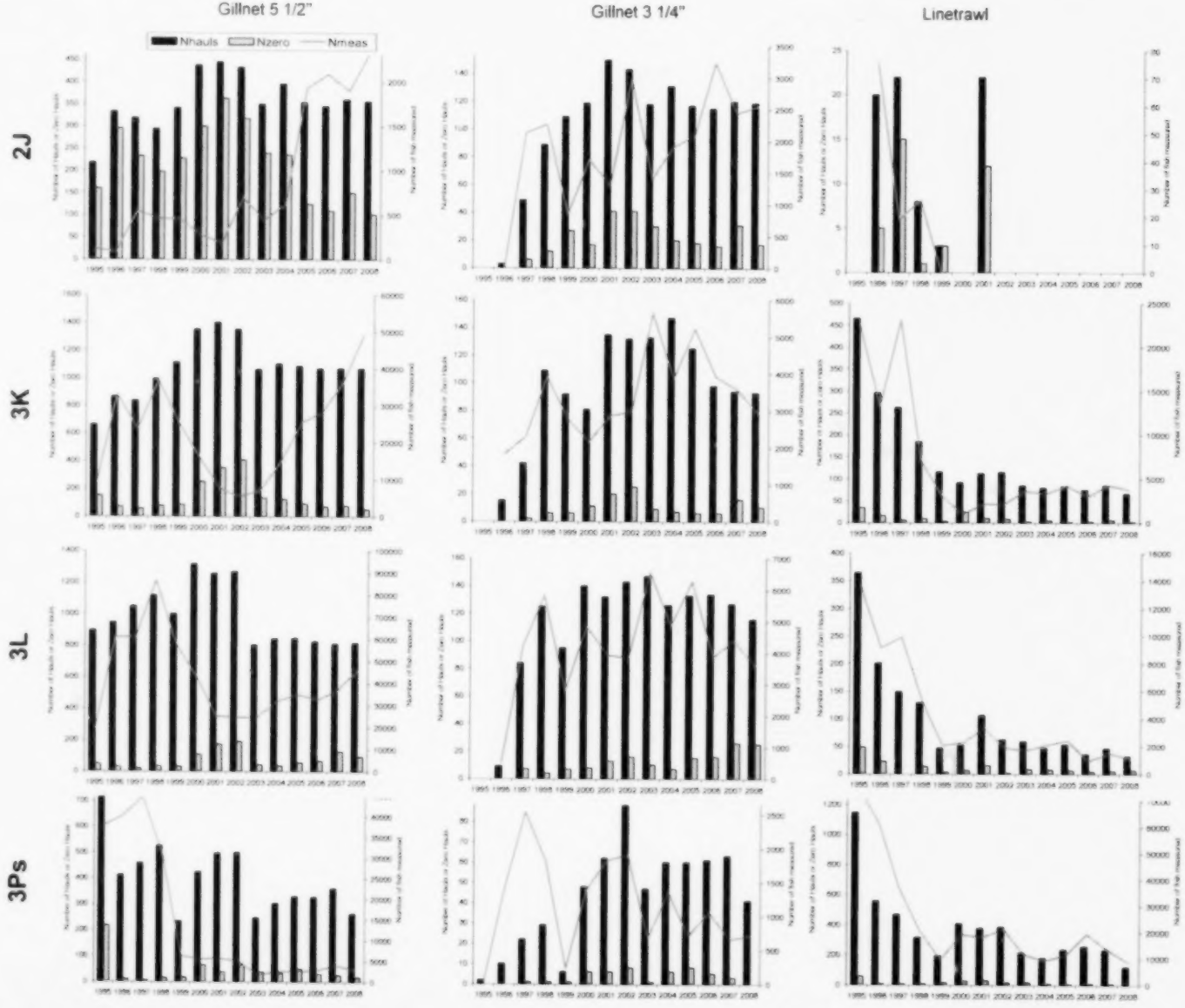

Figure 1. Summary plots of set and catch information by gear type and NAFO area, 1995-2008.

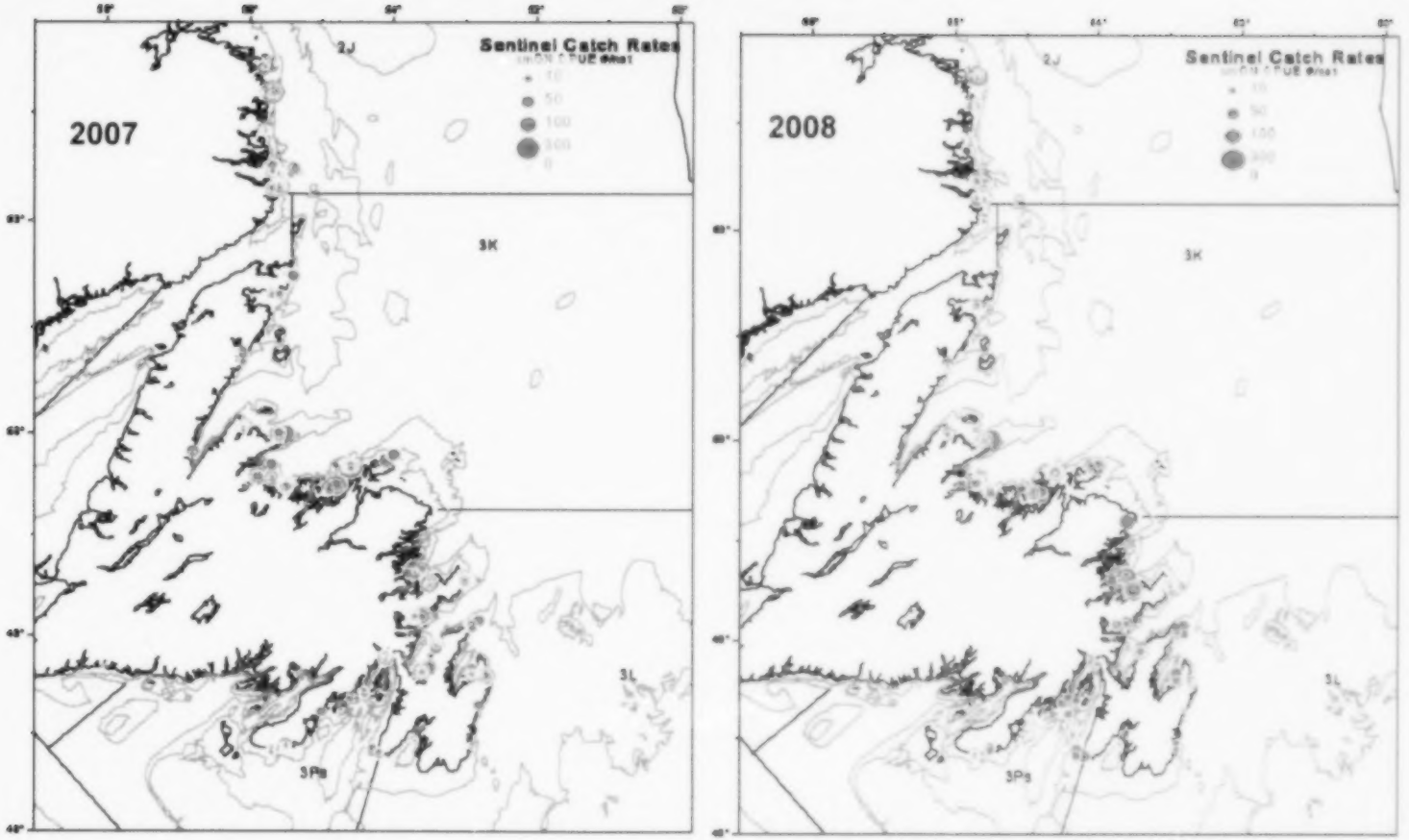

Figure 2. Sentinel surveys catch per unit effort (CPUE, number of fish per net) for 3 1/4 inch gillnet, 2007 and 2008.

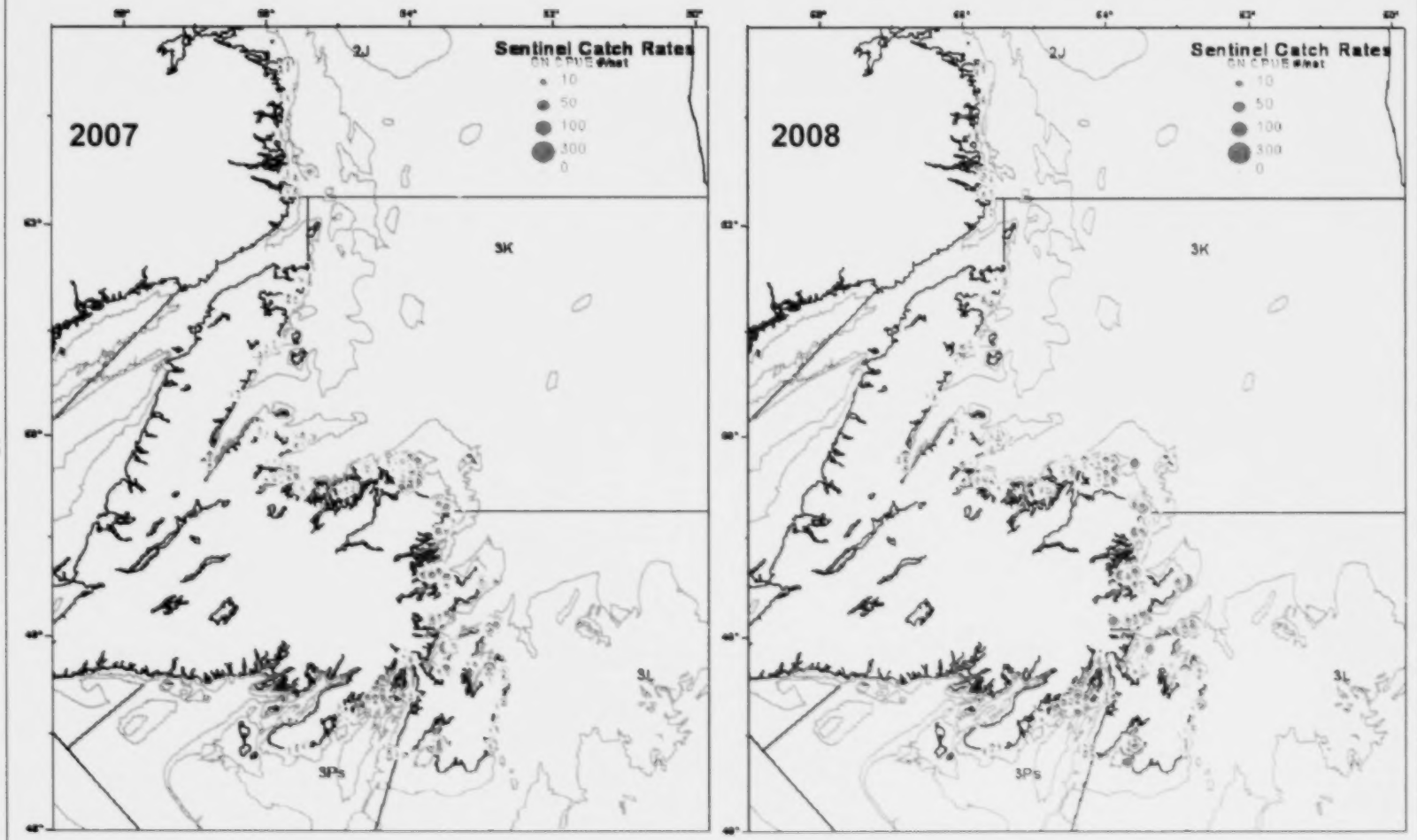

Figure 3. Sentinel surveys catch per unit effort (CPUE; number of fish per net) for 5 1/2" gillnet, 2007 and 2008.

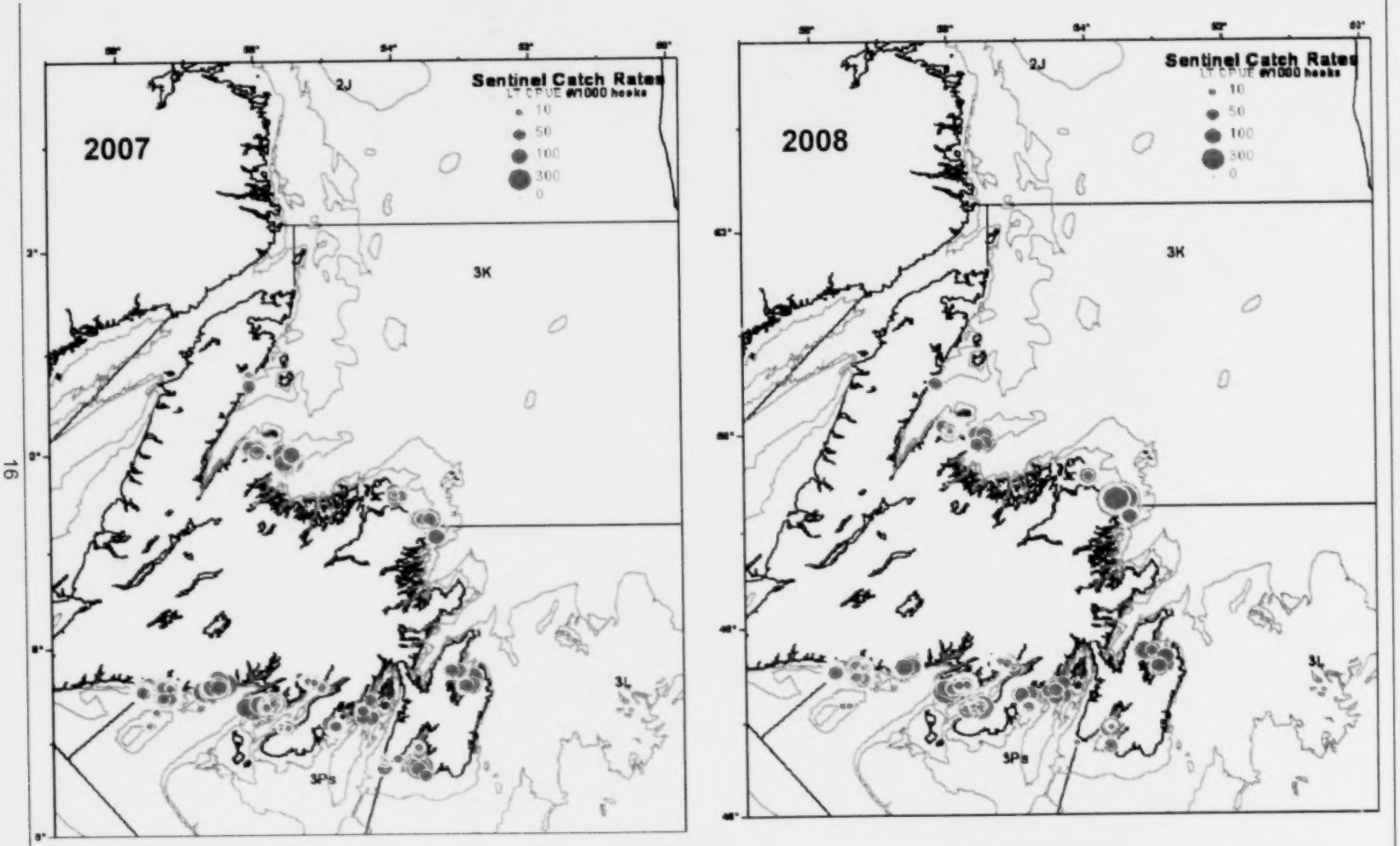

Figure 4. Sentinel survey catch per unit effort (CPUE; number of fish per 1000 hooks) for linetrawl, 2007 and 2008.

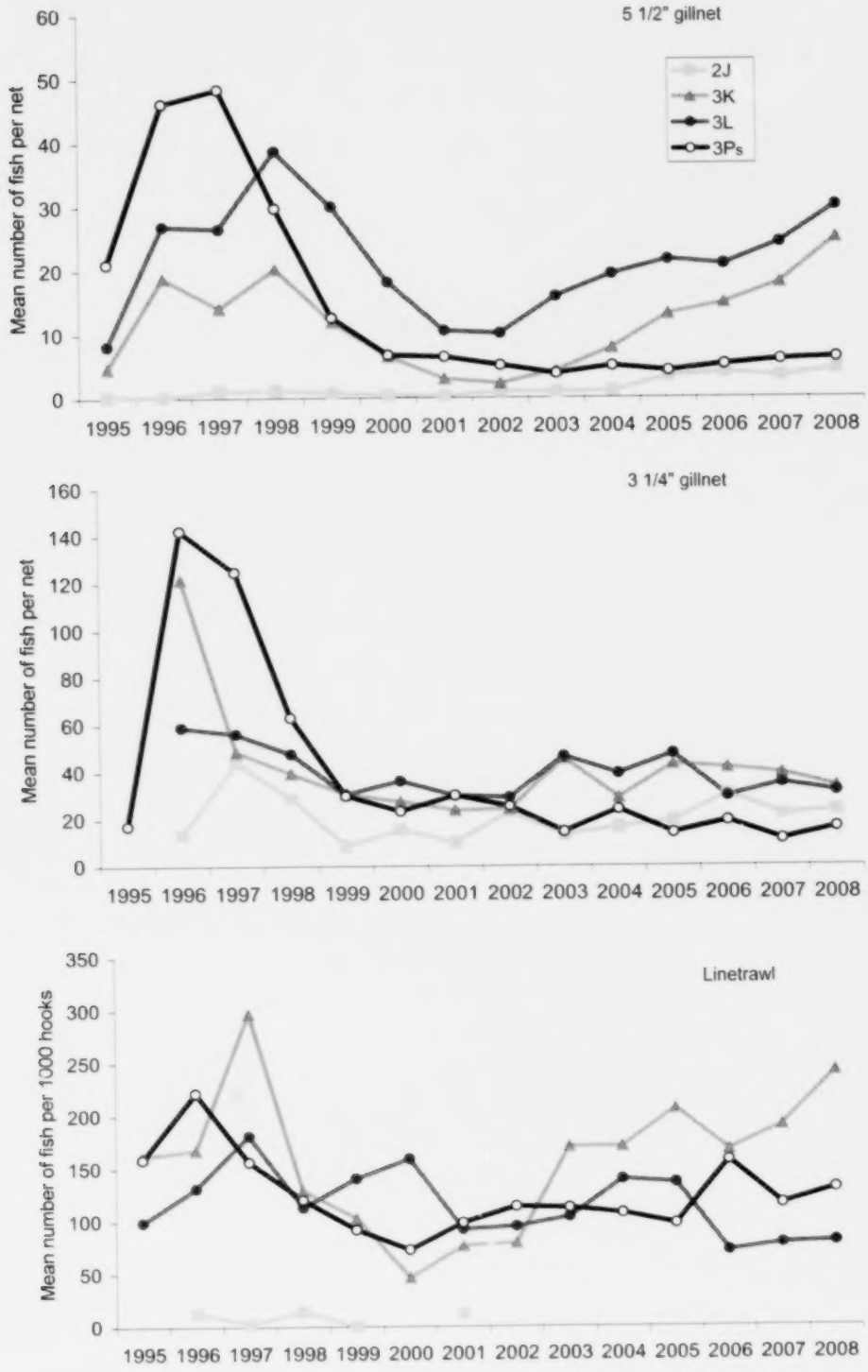

Figure 5. Mean catch per unit effort (number of fish per net or 1000 hooks) by NAFO area. Top panel $5^1/_2$ inch gillnet; middle panel $3^1/_4$ inch gillnet; lower panel linetrawl.

Figure 6. Mean catch per unit effort (CPUE; number of fish per net) for by community and NAFO area for 5 1/2 inch gillnet, 1995-2008.

Figure 7. Mean catch per unit effort (CPUE: number of fish per net) for by community and NAFO area for 3 1/4 inch gillnet, 1995-2008.

Figure 8. Mean catch per unit effort (CPUE; number of fish per net) for by community and NAFO area for linetrawl, 1995-2008.

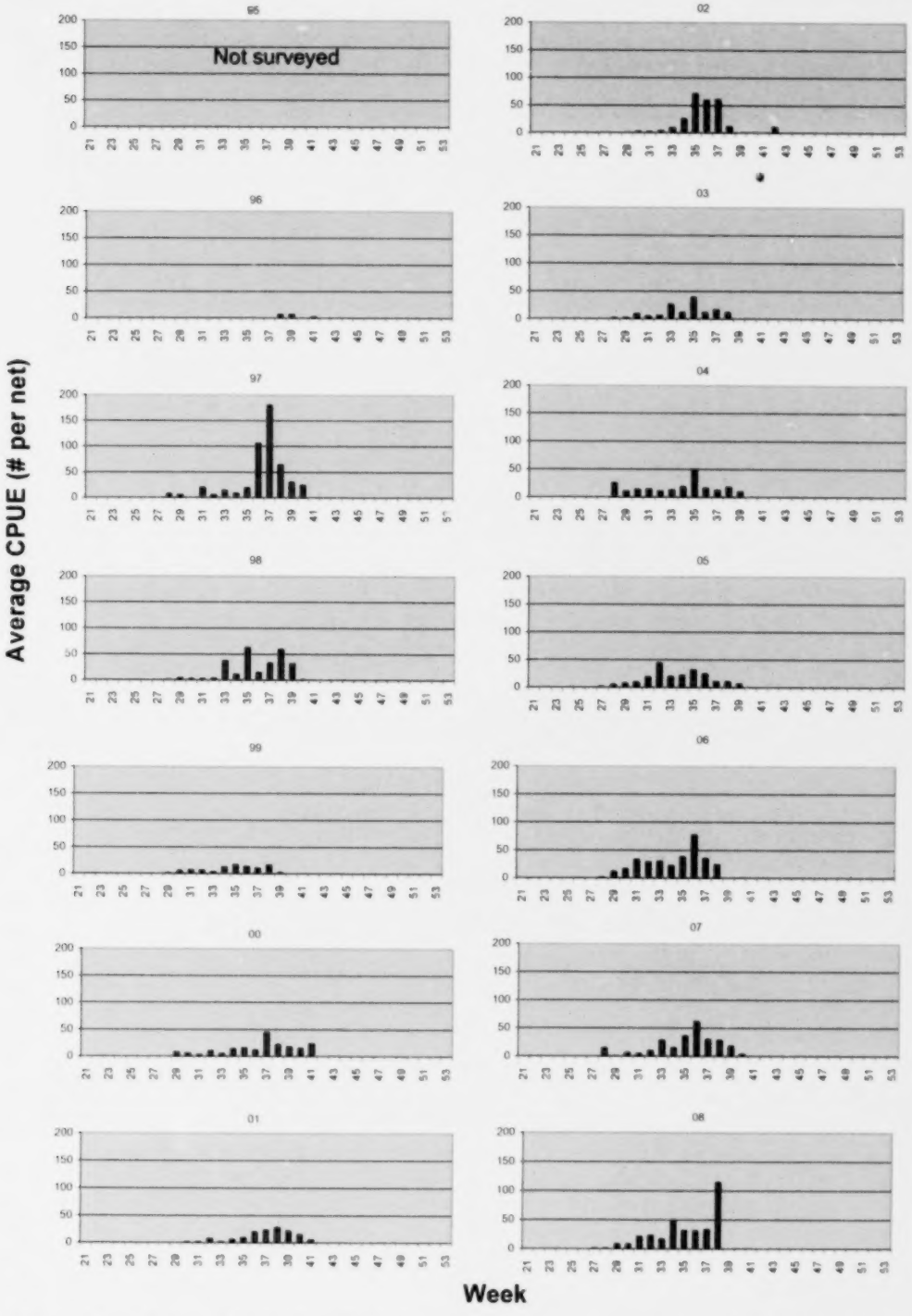

Figure 9. Sentinel small mesh gillnet (3¼ inch) in Division 2J: average catch per unit effort by week (number of fish per net) in 1996-2008.

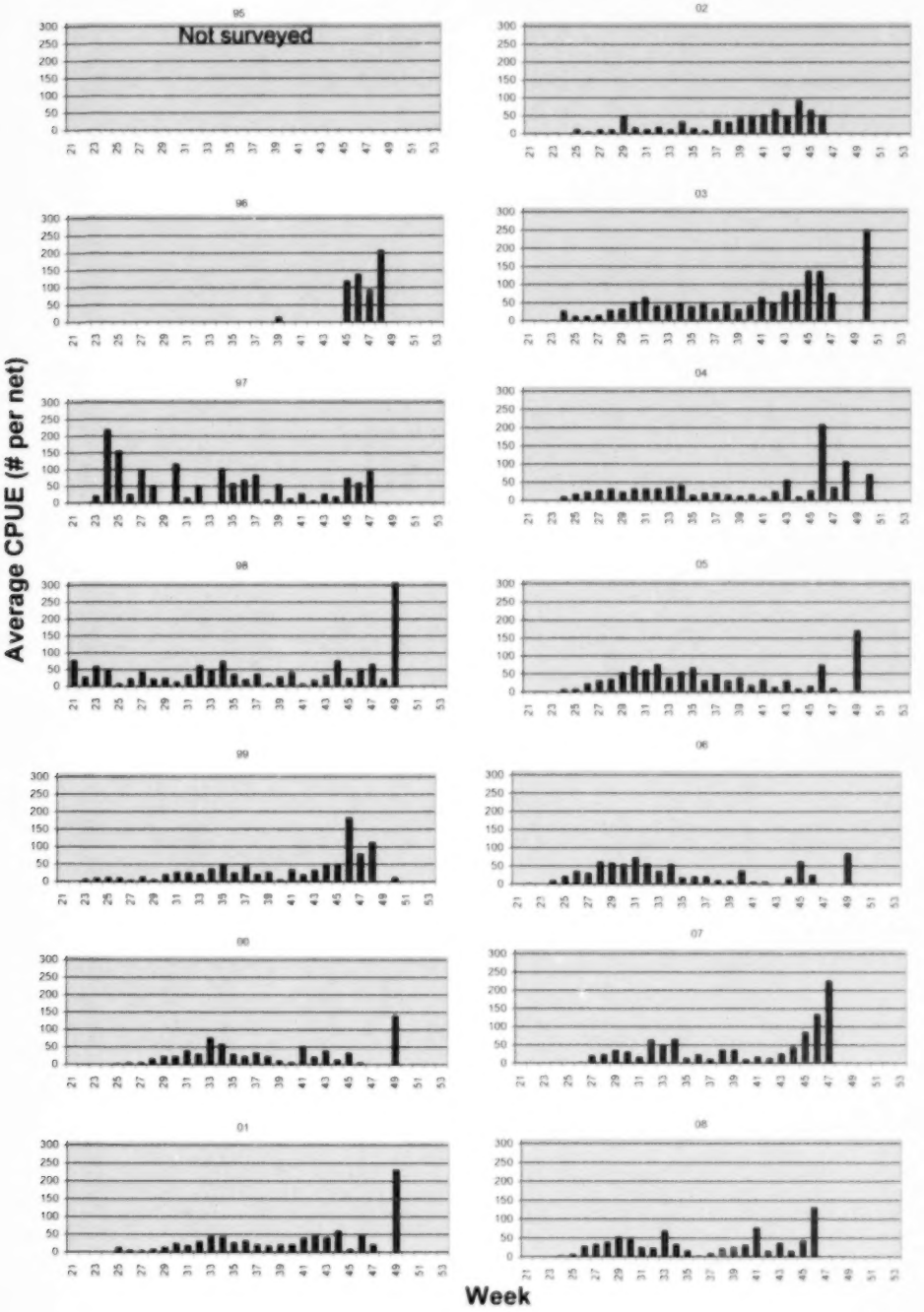

Figure 10. Sentinel small mesh gillnet (3¼ inch) in Division 3K: average catch per unit effort by week (number of fish per net) in 1996-2008.

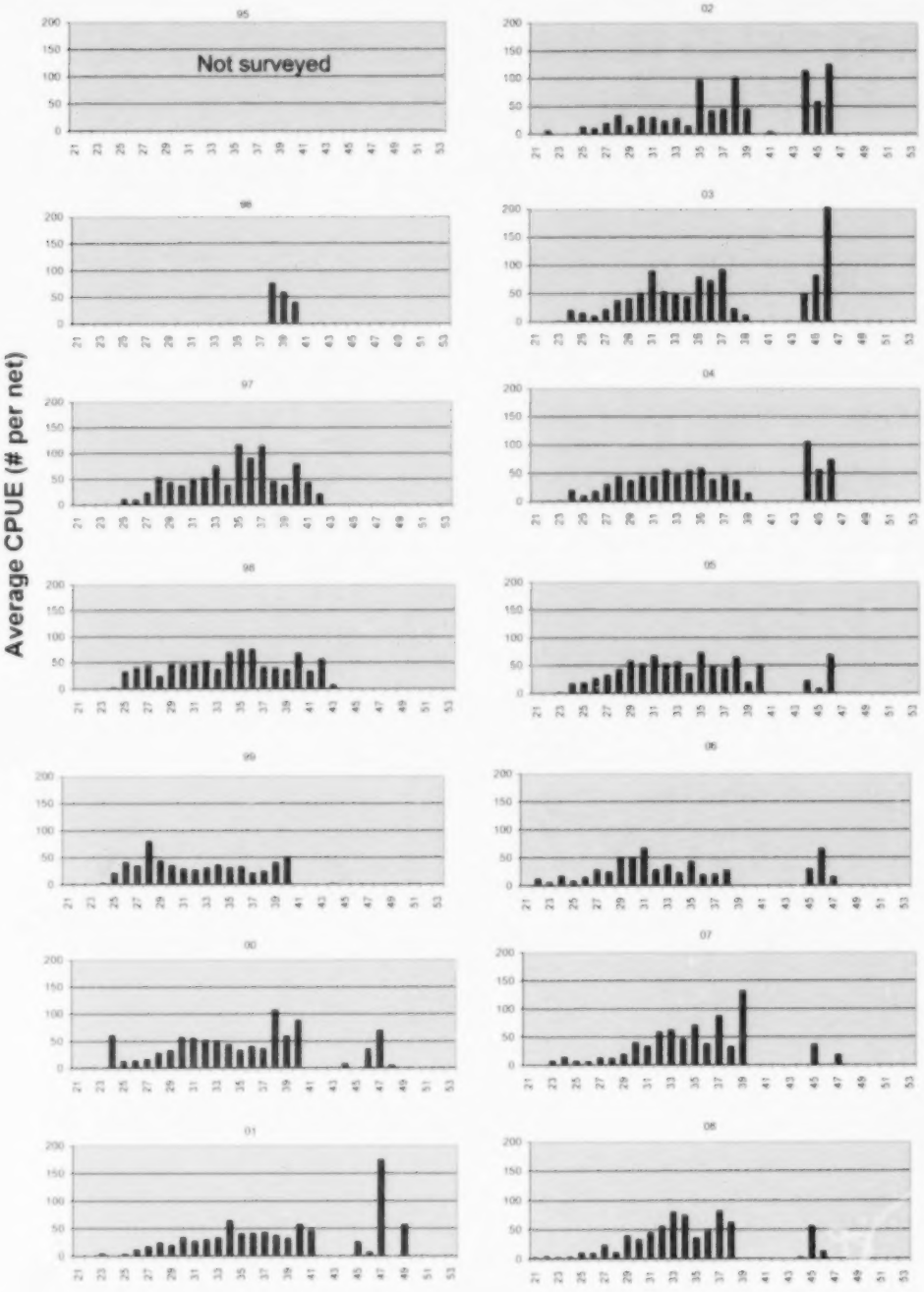

Figure 11. Sentinel small mesh gillnet (3¼ inch) in Division 3L: average catch per unit effort by week (number of fish per net) in 1995-2008.

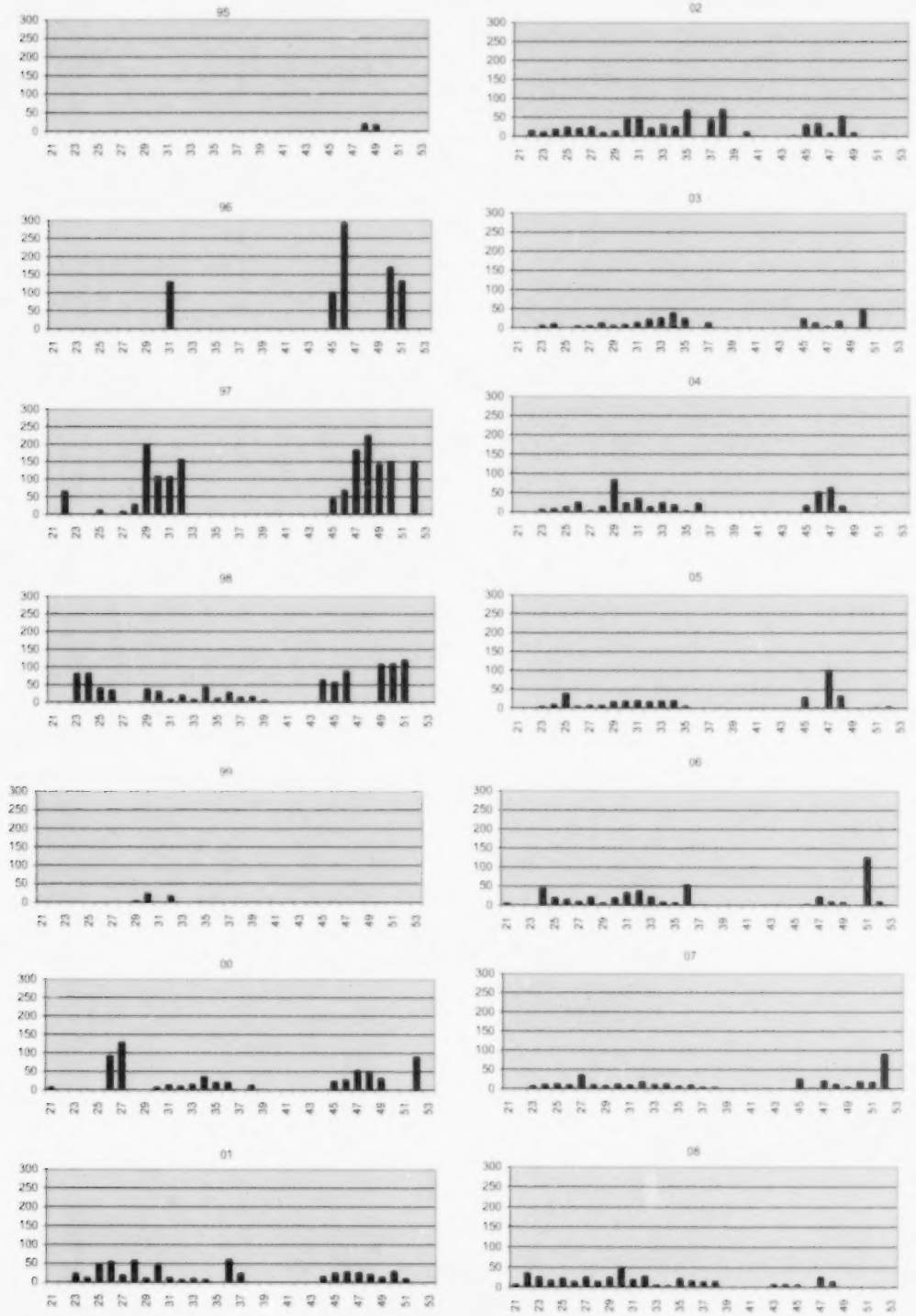

Figure 12. Sentinel small mesh gillnet (3¼ inch) in Subdiv. 3Ps: average catch per unit effort by week (number of fish per net) in 1995-2008.

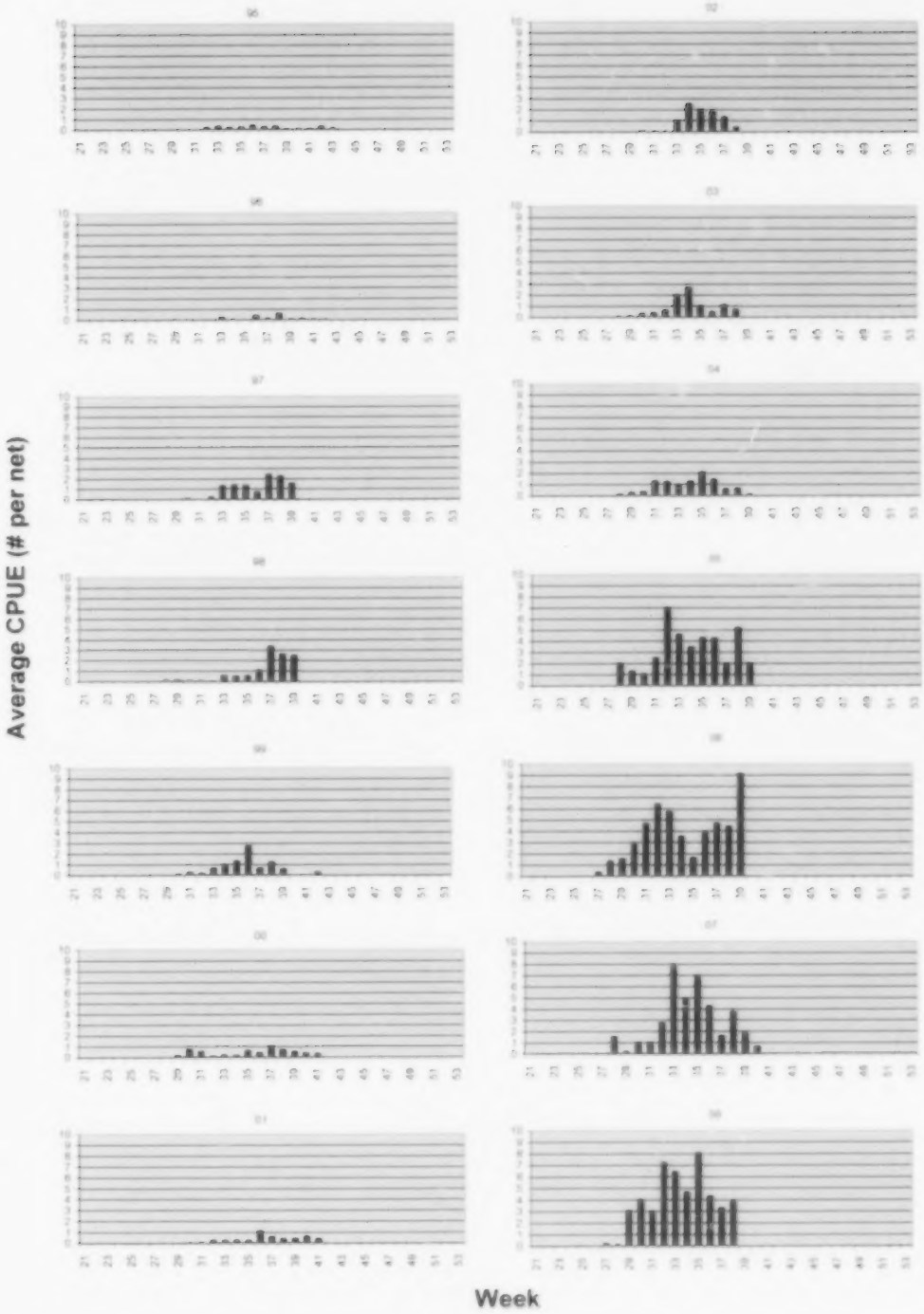

Figure 13. Sentinel gillnet (5 1/2 inch) in Div. 2J: average catch per unit effort by week (number of fish per net) in 1995-2008.

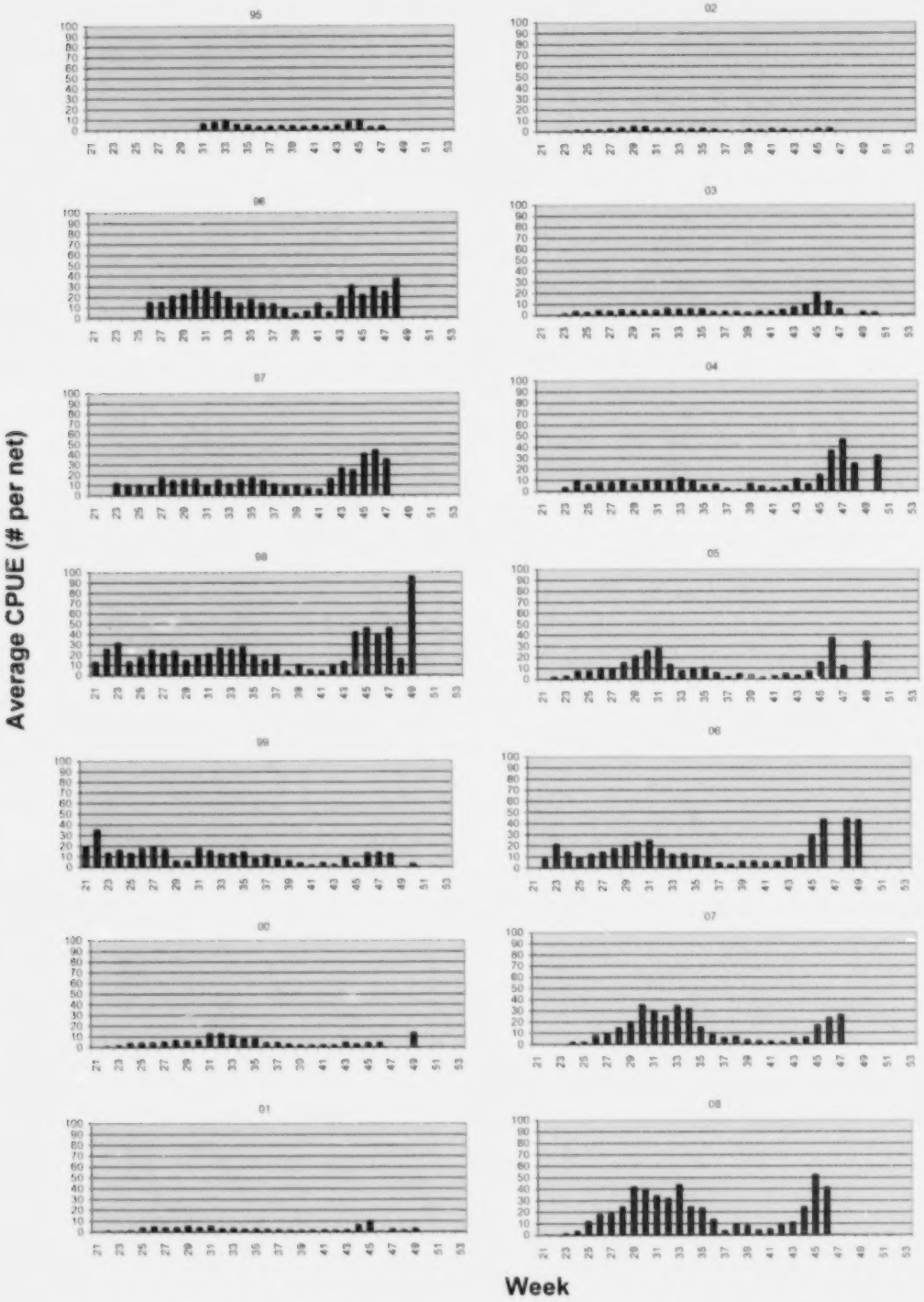

Figure 14. Sentinel gillnet (5 1/2 inch) in Div. 3K: average catch per unit effort by week (number of fish per net) in 1995-2008.

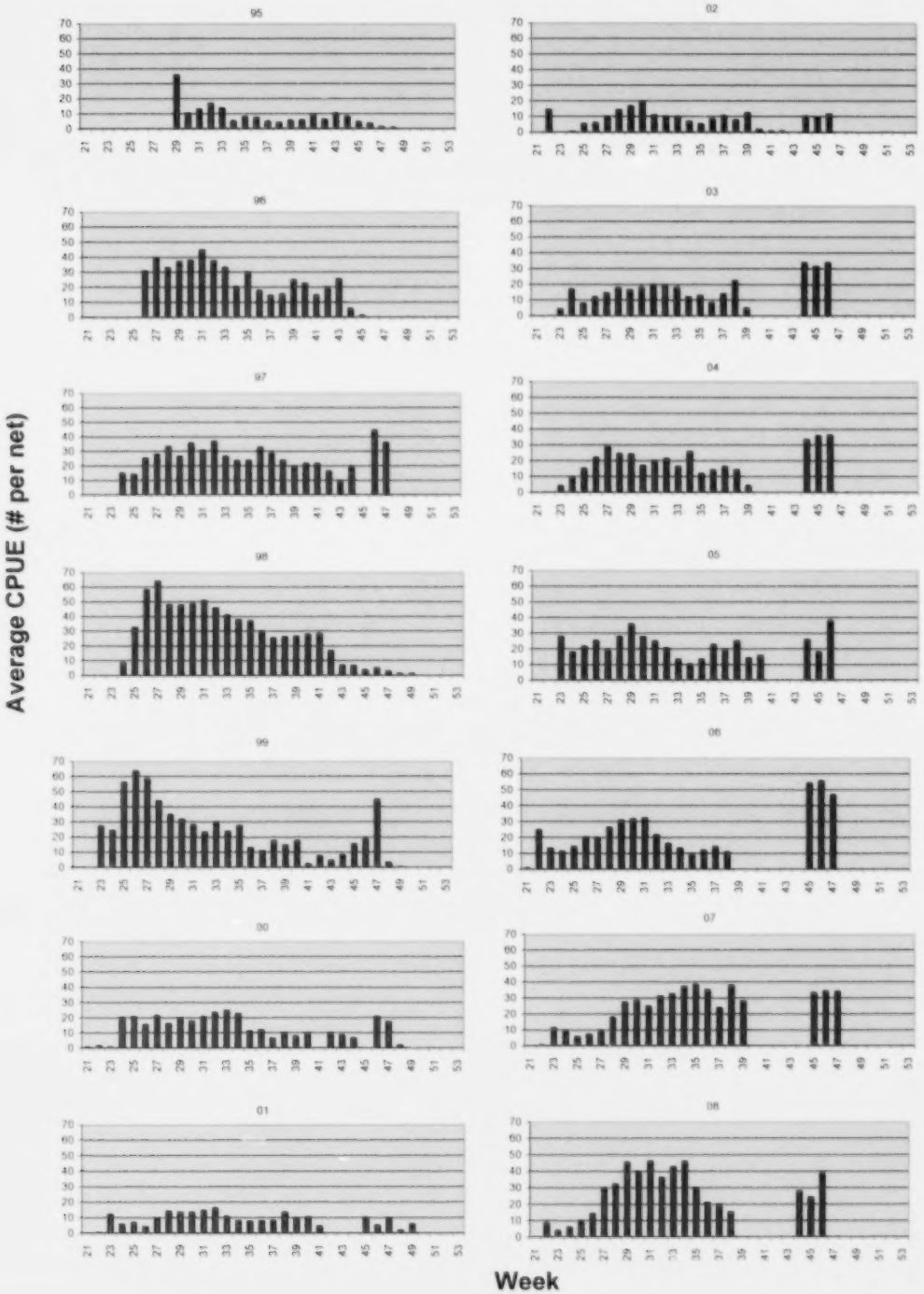

Figure 15. Sentinel gillnet (5 1/2 inch) in Div. 3L: average catch per unit effort by week (number of fish per net) in 1995-2008.

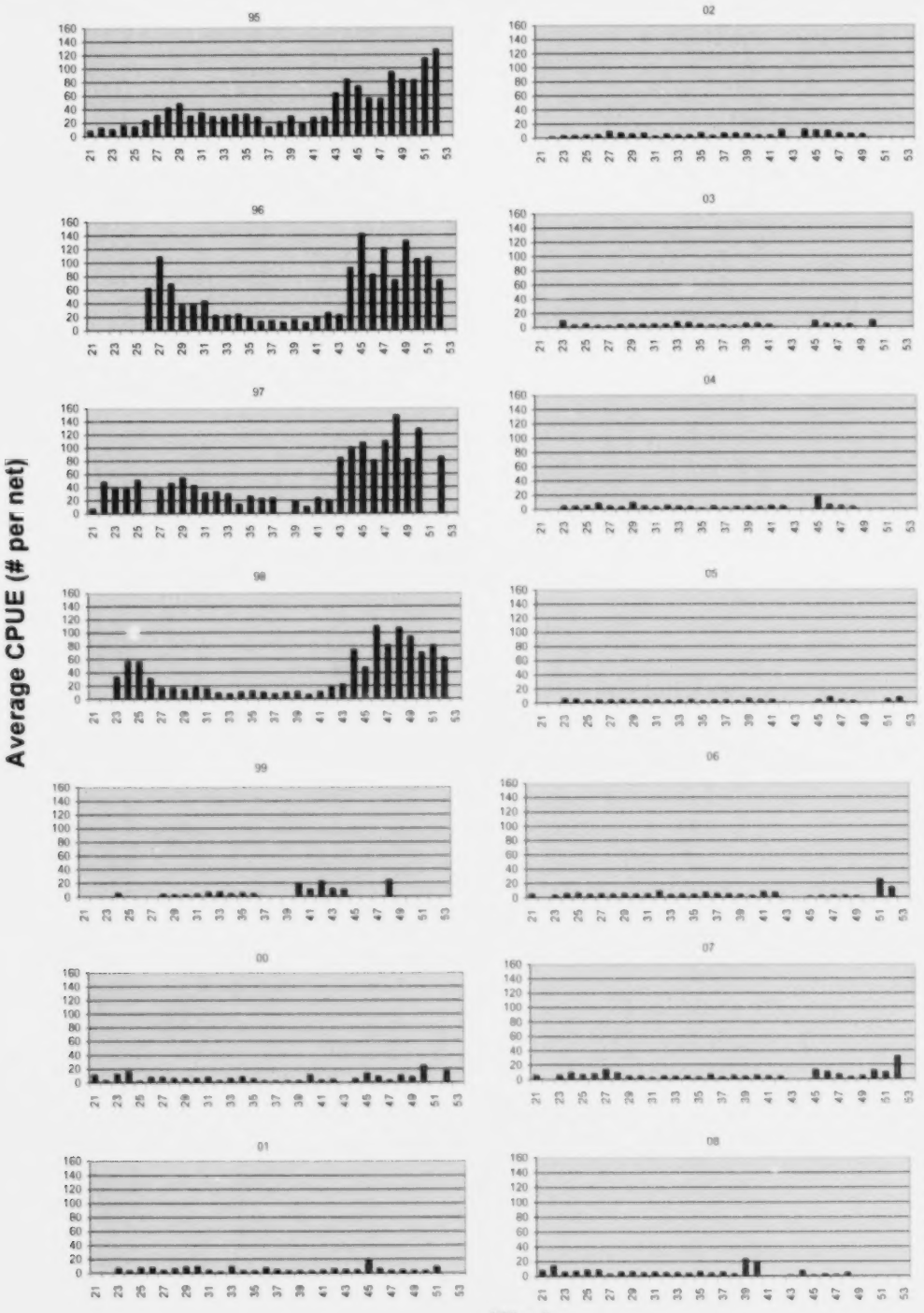

Figure 16. Sentinel gillnet (5 1/2 inch) in Subdiv. 3Ps: average catch per unit effort by week (number of fish per net) in 1995-2008.

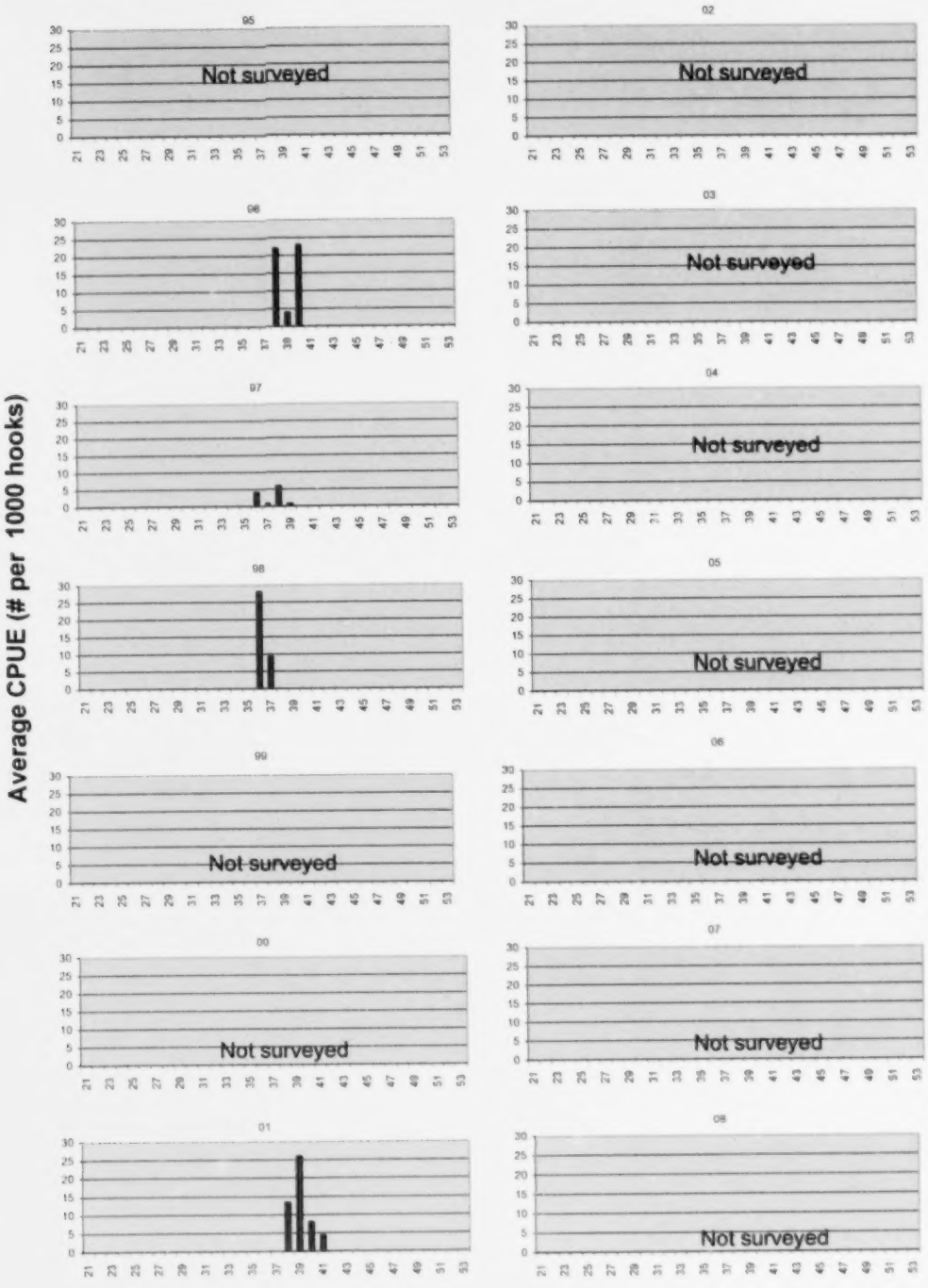

Figure 17. Sentinel linetrawl in Div. 2J: average catch per unit effort by week (number of fish per 1000 hooks) in 1995-2008.

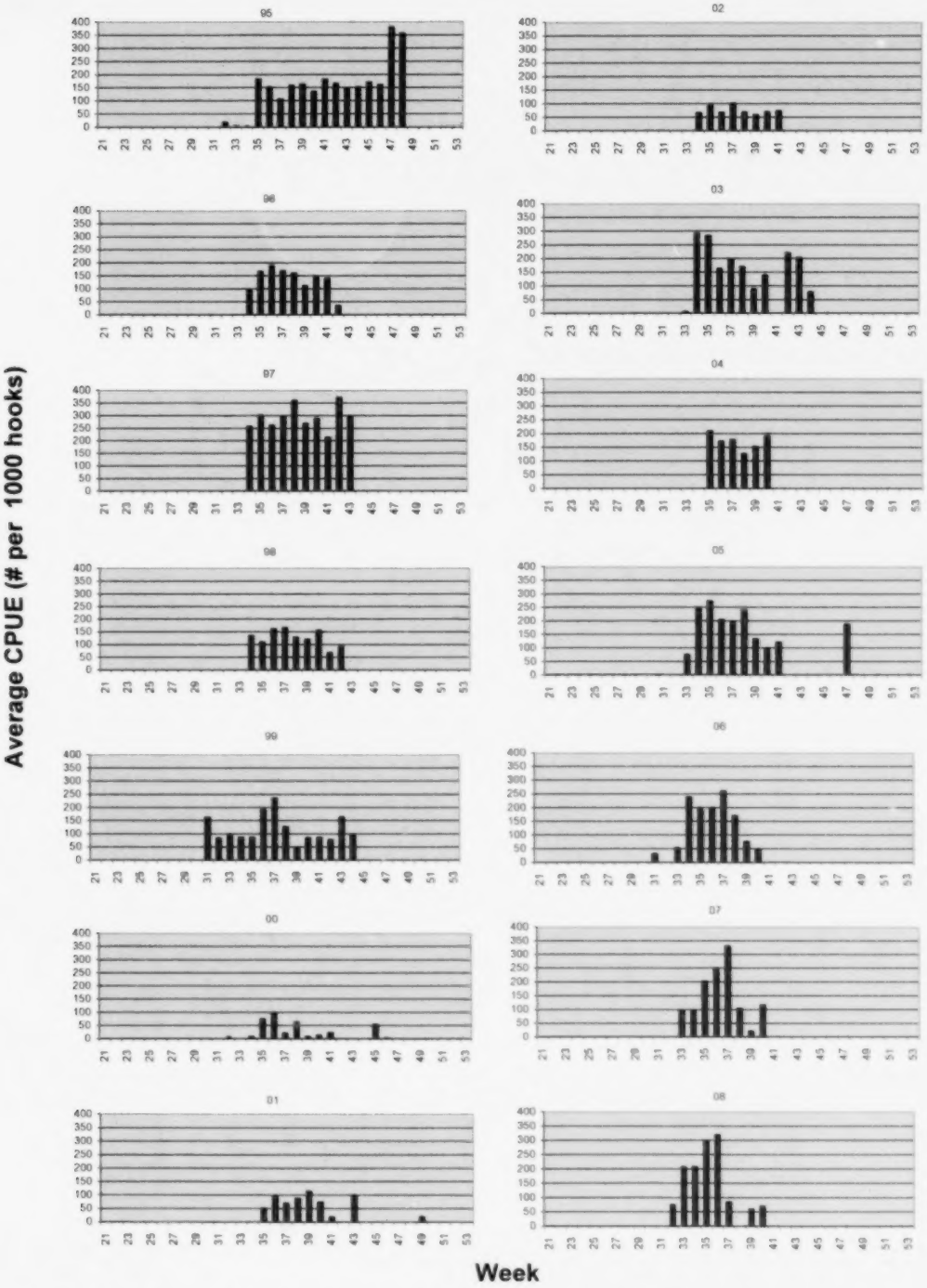

Figure 18. Sentinel linetrawl in Division 3K: average catch per unit effort by week (number of fish per 1000 hooks) in 1995-2008.

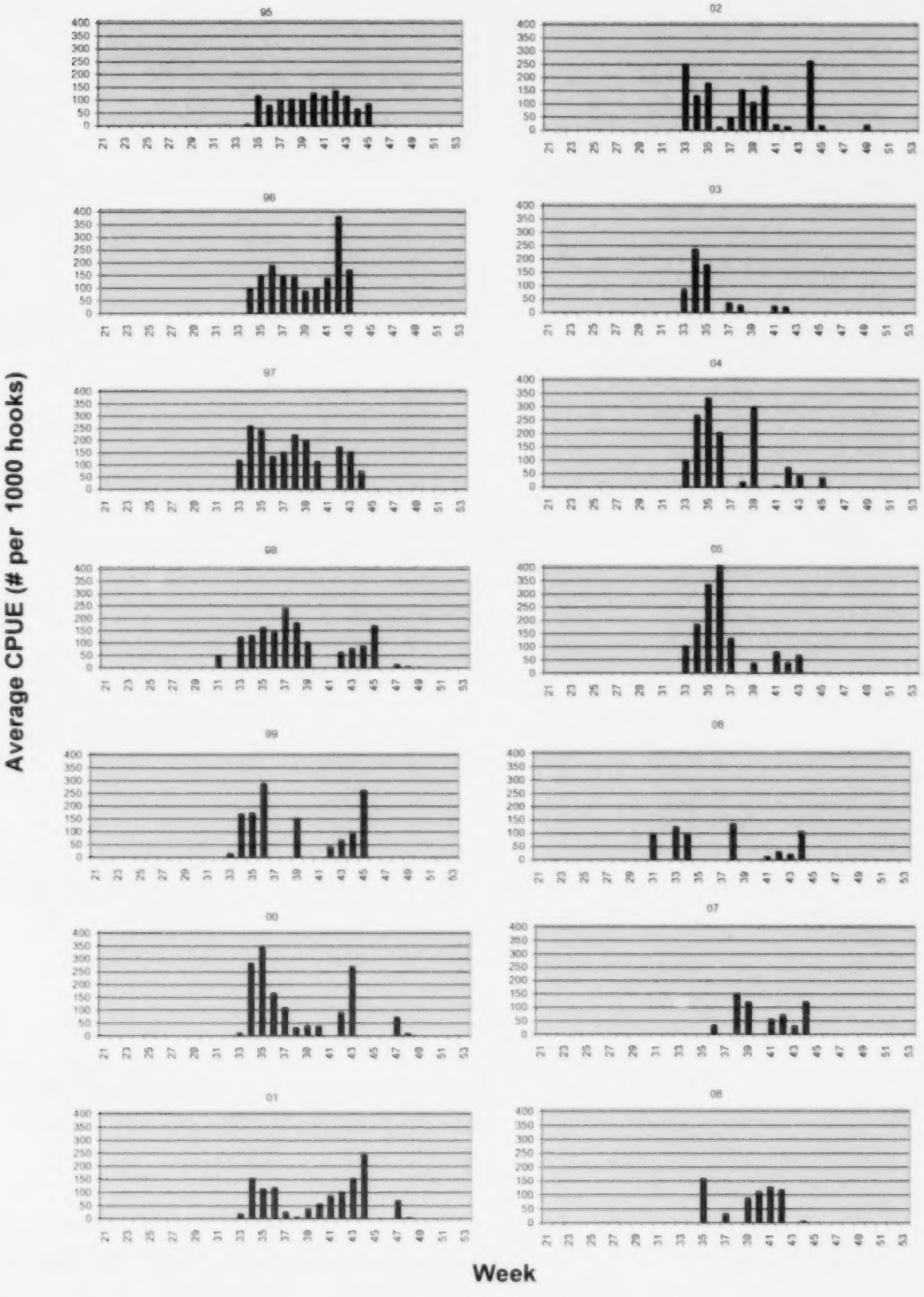

Figure 19. Sentinel linetrawl in Division 3L: average catch per unit effort by week (number of fish per 1000 hooks) in 1995-2008.

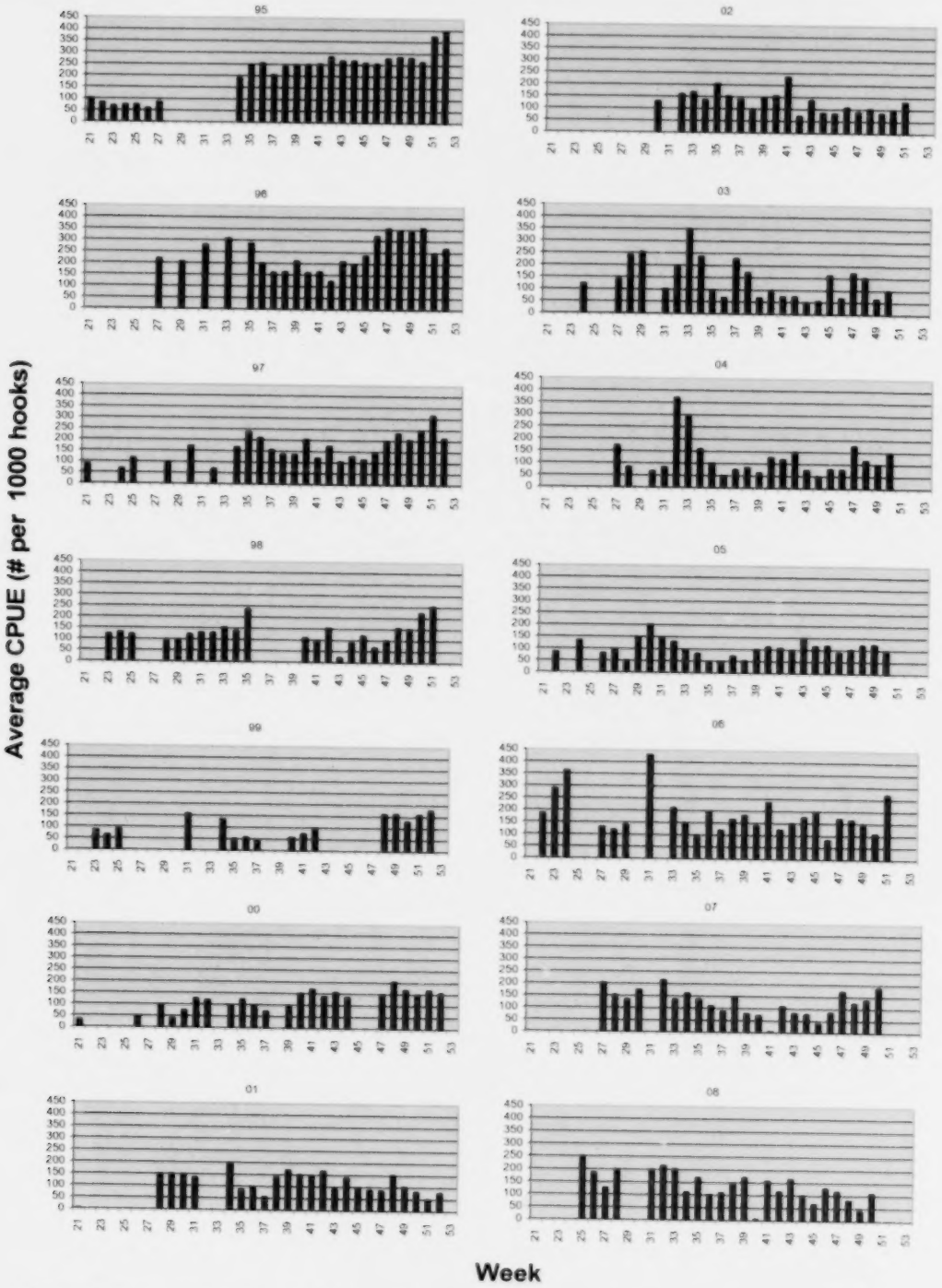

Figure 20. Sentinel linetrawl in Subdivision 3Ps: average catch per unit effort by week (number of fish per 1000 hooks) in 1995-2008.

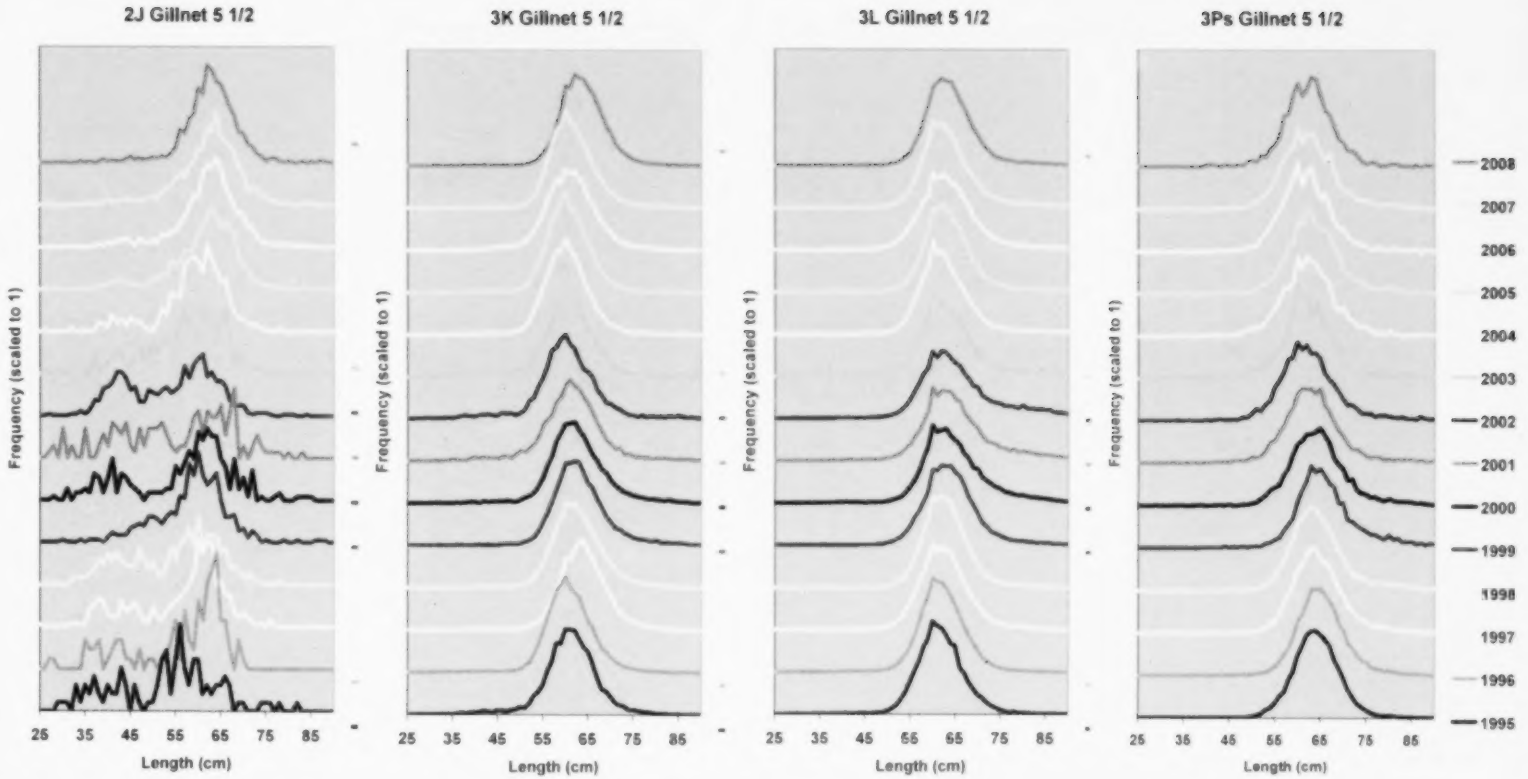

Figure 21. Length frequencies for 5 1/2 inch gillnet from 1995-2008 by NAFO area. Frequencies are totaled for each area and then scaled to 1.

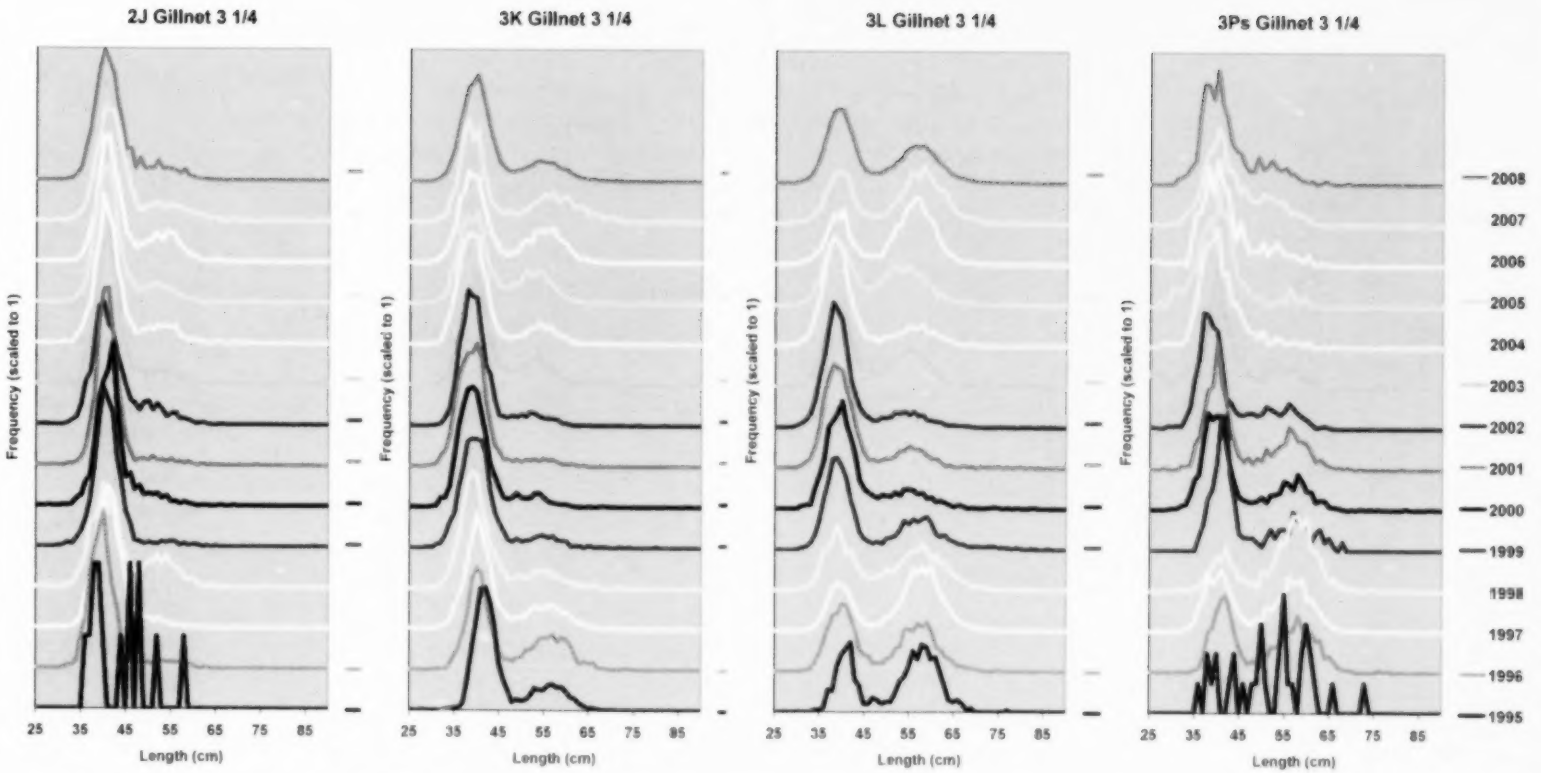

Figure 22. Length frequencies for 3 1/4 inch gillnet from 1995-2008 by NAFO area. Frequencies are totaled for each area and then scaled to 1.

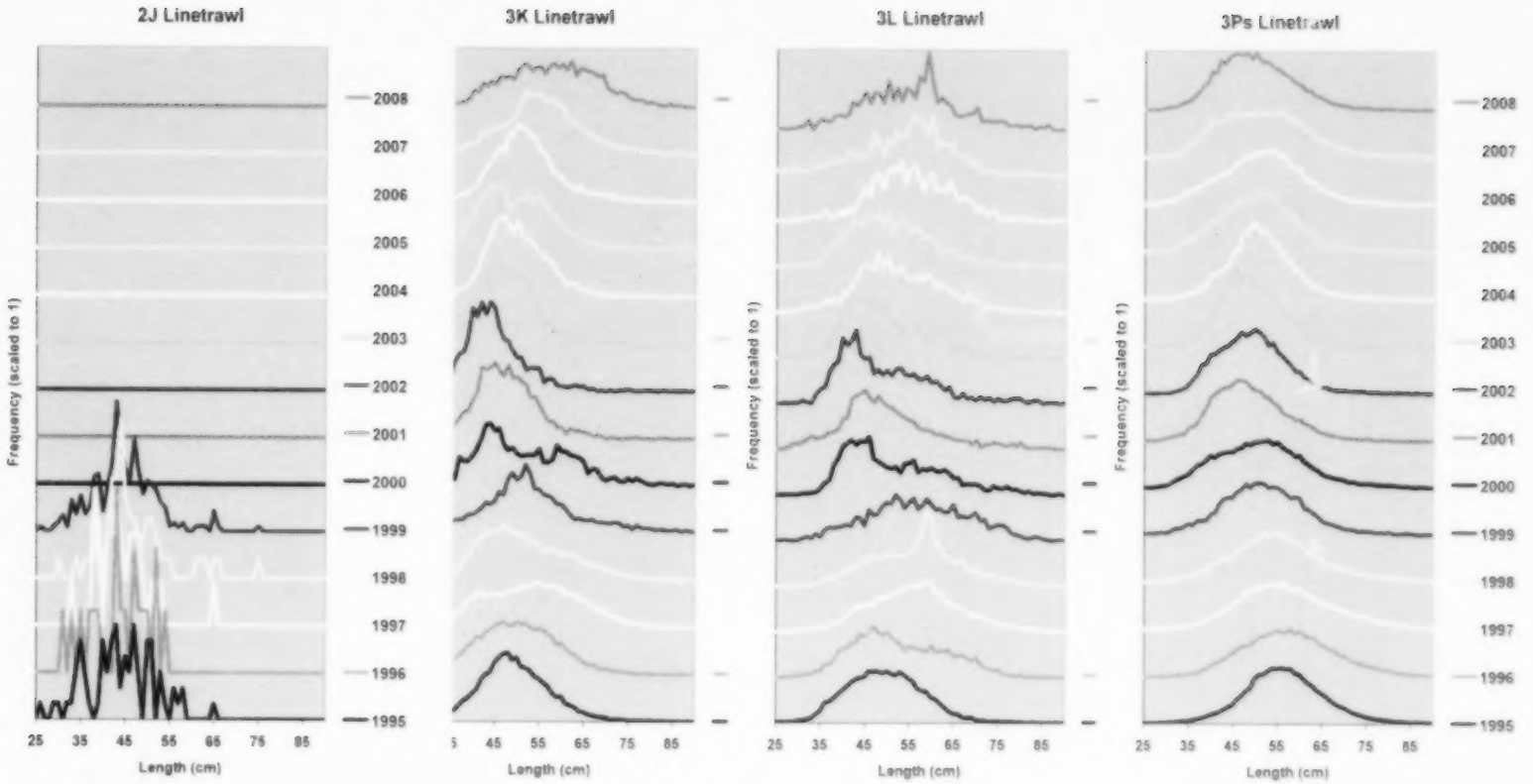

Figure 23. Length frequencies for linetrawl from 1995-2008 by NAFO area. Frequencies are totaled for each area and then scaled to 1.

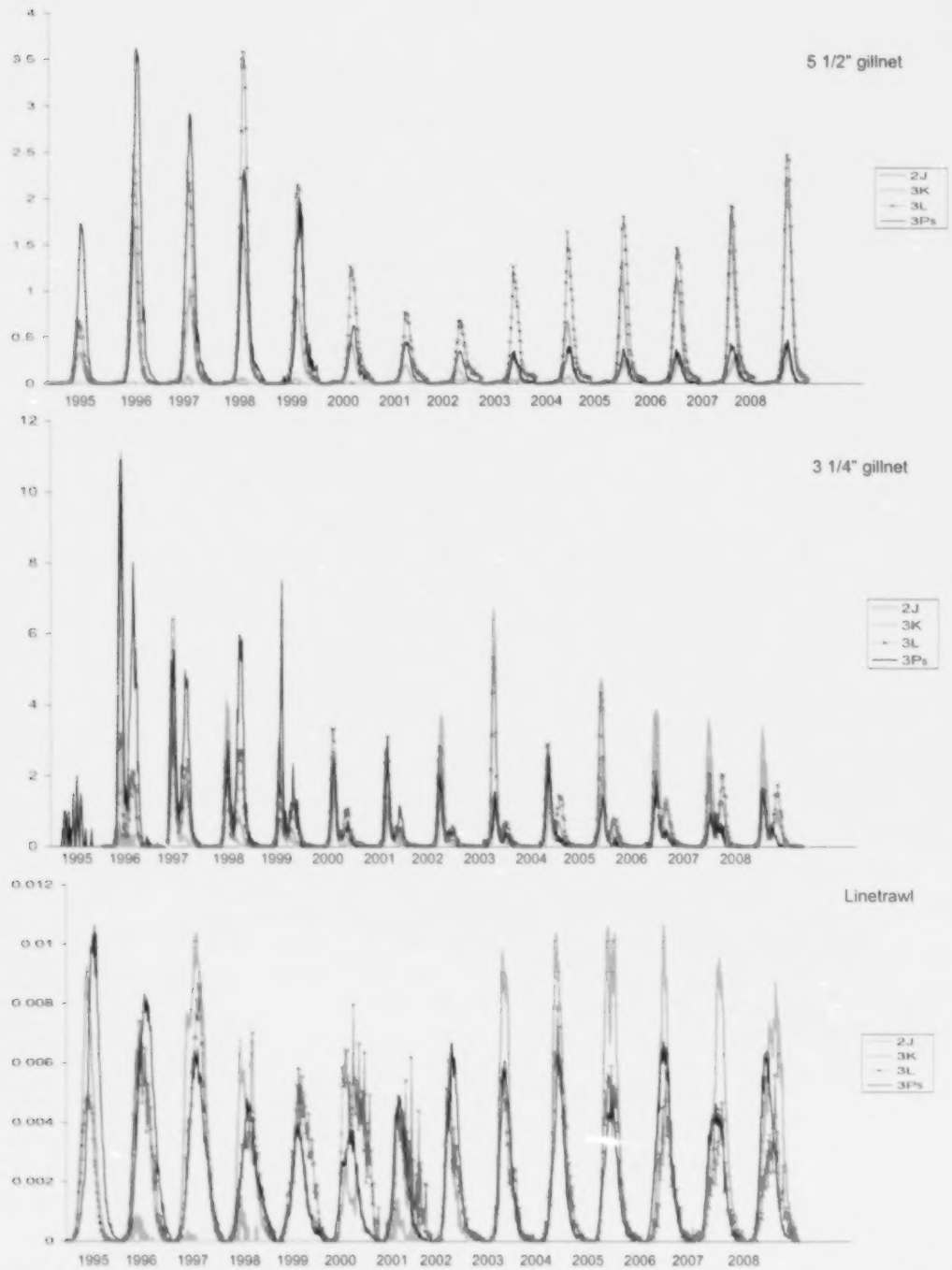

Figure 24. Length frequencies scaled to effort for gillnet and linetrawl (1995-2008). Each frequency ranges from 20-90cm. Top panel 5 1/2 inch gillnet, middle panel 3 1/4 inch gillnet, lower panel linetrawl. Note different Y-axes scale.